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Our Forest Hunger

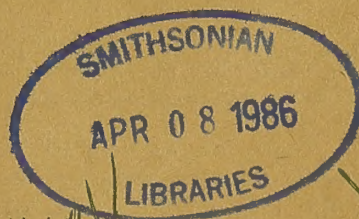
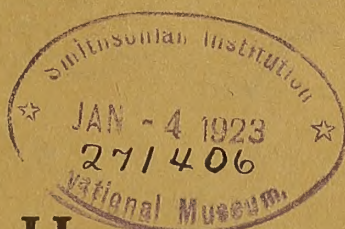
Forestry and Our Land Problem

Wild Fowl Lore

The Girl Behind The Fire Line

The Romantic Parasite

Pennsylvania's Alpine Club



The American Forestry Association

Washington, D. C.

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Declaration of Principles and Policy of the American Forestry Association

IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products;

employ 735,000 people; pay \$367,000,000 in wages; cover 850,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.

Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classifications by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

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AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor

L. M. CROMELIN, Assistant Editor 271 406

Vol. 29

JANUARY, 1923

No. 349

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CHANGE OF ADDRESS

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The New Year

With this issue, *American Forestry* begins the New Year under new editorial management. Its first message to its readers is the old—and yet never old—message of the Yule log, which through countless ages has marked the changing years and symbolized the season of good cheer and brotherly Godspeed. This printed page, caste from the wood of the forest, is *American Forestry's* Yule log, carrying to you, good reader, the season's greetings. If its touch seems unduly cold, light it and its glow will be as bright as that of the hewn bolt.

Why those old barbarians of many centuries past, and the Christians following, chose the burning of a log as the symbol of the period of changing events, we of today do not know. But choose it they did. And it so happens that as the year nineteen-twenty-two shed its leaves, the tide of changing events set in for *American Forestry*. The Association's president, its secretary, and a number of its board of directors, all of whom have served the cause of forestry long and notably, decided to retire from active service in the affairs of the Association and to entrust its management to new hands.

Another month, and a new set of officers of the Association will have been elected. With whatever concern one may view changing directorates, it is comforting to know that the cause of American forestry has listed under its banner many men competent and willing to take up the torch of leadership. And the men elected this month will be leaders. There is no doubt as to that. They will be men who will labor and sacrifice to make the *American Forestry Association* the dominant, fighting force it should be in the perpetuation of American forests.

The task ahead! It is large. And yet it invites. The new year marks the beginning of a decade which will be packed full of vital and interesting events relating to American forests and the effort to give them their rightful place in the affairs of the nation. It promises to be the most important decade in our forest history. Public sentiment, long apathetic, is rumbling throughout the land like an approaching storm. For the full significance of forests in relation to our national need for raw wood, for recreation, for the perpetuation of fish and game, for the protection of our inland waterways, our industries and our agriculture, is rapidly being grasped by the new generation. And this growing sentiment is not unmixed with intolerance at the scant attention thus far given to our forest needs by State and national lawmakers.

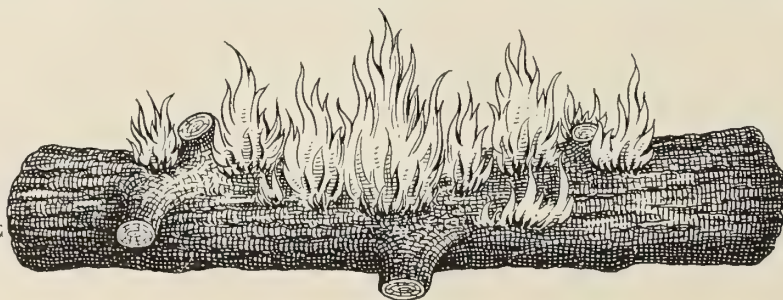
In this struggle, the *American Forestry Association* has a mission to fulfill. It is the mission of tempered leadership; the mission of bringing together the best thought of the best minds of those who have studied our forest problems; the mission of directing public sentiment along enlightened channels and of supplying it with the co-operative machinery with which to bring about the character of accomplishment best suited to the nation, the states and the communities.

It is the season of good endeavors. In building a bigger, a more aggressive and a more influential organization, your new officers will need help. They will need your help and your co-operation—all of you who believe in and love forests for any or all of the many ways in which they serve to make this a better, cleaner, and more prosperous country to live in. The opportunity is at hand—your opportunity—to help build up a national association so strong and so far-reaching that its support of desirable local developments as well as national measures in the field of forest perpetuation will bring quick and definite results. It will be done. Your help will hasten the fulfillment.

As for the *American Forestry Magazine*, it will strive faithfully to portray and aggressively to direct along sound lines the great development in forest interest now impending throughout the United States. It will in nowise assume the aspects or the text of a professional or technical magazine. Far from it. Written in popular style and beautifully illustrated, its articles will be from the leading writers in every field relating to the forest. They will tell you interesting and instructive things about trees and the uses of wood, tree planting in field and on roadside, wild animals and plants of the forest, State and national forests and parks, forest recreation, memorial trees, the progress of forestry at home and abroad. They will tell you interesting things which people are doing with trees and for the cause of forestry. And each month there will be a popularly written article on some economic phase of our forest problem.

In short, good reader, the pages of *American Forestry* will bring under your reading lamp for you and your children, in story and in picture, the forest in all its vital and enchanting variety.

THE EDITOR



AMERICAN FORESTRY

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Our Forest Hunger

BY OVID M. BUTLER

THE train was winding through a ravine of the Western Mountains. On both sides the land sloped steeply upward and shut out all view of the sky from those within the cars. The slopes, once green with dense forests, were now a forbidding wreckage of high stumps and tangled brush, blackened by the poisoning tongues of forest fires. Three men silently smoked their after-dinner cigars in the smoking compartment of the rear coach. The dry goods merchant from Portland, his attention suddenly arrested, leaned forward and peered upward through the window.

"Devastation personified!" he exclaimed.

The drummer from the East turned upon him with silent but appraising scrutiny.

"What of it?" he said finally. "The land is good for nothing."

"It will grow timber," ventured the man from Portland.

"In a hundred years—yes, but who wants to wait a hundred years?" The drummer violently knocked the ashes from his cigar. "Back East in my State," he continued, "a crowd of theorists are going crazy over this forest question. They're bugs on it. Why, they are agitating a bond issue from which the State will buy up great tracts of land and plant them in forests. That's all foolishness. Suppose our forests do give out! What of it? It wouldn't affect you or me or this gentleman on my left enough for us to notice it. Leave it to American inge-

nuity. It will provide the necessary substitutes for wood."

The man on the drummer's left leaned forward and fixed a pair of keen black eyes upon the speaker. "Pardon me," he said politely, "since you have involved me in your statement, I feel constrained to tell you that you don't know what you are talking about."

"That's speaking out in meeting, to say the least," rejoined the drummer, testily. "Nevertheless, I reassert

that I could be deprived of wood tomorrow and for the rest of my life and miss it no more than a lot of this patent breakfast food."

"My friend," replied the other, who apparently was an economist, "if you are speaking only of yourself, I have no interest in pursuing the argument, but if you are speaking of the average American citizen, I take issue."

"Well, for the sake of argument, make it the average

American citizen," rejoined the drummer, cockily.

"The average American citizen," continued the economist, "deprived of wood would be the unhappiest creature in the world. His whole life, social and industrial, is molded and influenced by free access to and abundant use of the forests and forest products. Let us begin with his home. Whether it is built entirely of lumber or in part of brick, tile, stone, stucco, or something else, it is steeped in wood—wooden floors, wooden finish, wooden millwork, wooden furniture, wooden picture frames, and



"DEVASTATION PERSONIFIED!" EXCLAIMED THE MERCHANT FROM PORTLAND. "WHAT OF IT?" REPLIED THE DRUMMER, "THE LAND IS GOOD FOR NOTHING." BUT THE DRUMMER CHANGED HIS MIND

so on down to the keys of his piano and the records of his phonograph."

"The records of his phonograph?" said the drummer, skeptically.

"Yes, they are sixty per cent wood. The paint on his house, inside and out, contains turpentine from southern pines. The paper on its walls is made from spruce or hemlock. The linoleum on the kitchen floor is made in part of wood flour. His house is lighted by electricity brought to him by wires strung on wooden poles. In winter it is heated by coal, in the mining of which great quantities of timber are used each year."

The drummer bit his cigar and crossed his knees uneasily.

"This average American citizen sleeps in a wooden bed or under blankets in the manufacture of which the wooden shuttle is indispensable," went on the economist. "Arising in the morning, he washes with soap containing a forest product. It is a fair assumption that he puts on at least one garment, hose, necktie or underwear—manufactured from the fiber of wood. He pulls on shoes, the leather of which has been tanned with tannic acid from chestnut wood or hemlock bark. Those shoes have been made over a maple shoe last. He brushes his hair—be it ever so little—with a wooden-handled brush and then proceeds to breakfast, where he sits upon a wooden chair at a wooden table and partakes of food which has been shipped in boxes, made of wood or wood fiber—"

"I've heard that line before," interrupted the drummer, intolerantly.

"Do you know, my friend, how many wooden boxes it requires annually to satisfy this nation's hunger for citrus fruit and apples?" the other asked bluntly.

"Can't say that I do," grunted the drummer.

"Over fifty million! Place those boxes end to end and they would reach from New York to San Francisco and back again three times. They contain enough lumber to build 15,000 homes every year, or a city of 75,000 population.

"Think of it!" exclaimed the merchant from Portland.

"But to return to our average American citizen and

his breakfast orange," the economist continued. "His wife permitting, he reads the daily news of the world from a paper made of wood pulp, printed with ink containing a forest product and reproducing despatches which have traveled over hundreds of miles of wires supported by wooden telegraph poles. Breakfast over, he lights his cigar or cigarette with a wooden match struck on a wooden box, kisses his wife good-bye and puts on his hat which has been shaped over a poplar hat block. He steps out to his automobile, in the manufacture of

which some five hundred board feet of ash, hickory, maple, birch, gum, oak, or pine have been consumed, and he proceeds to work. If not sufficiently prosperous to own an automobile, he boards a street car or a train, in the making of which wood is largely used. The track on which the car or train runs is laid on wooden ties. Settled in his office, he is still in continual contact with wood—wooden office trimmings, desks, chairs, lead pencils, and letters and reports typed on paper made of the forests. Late in the afternoon he goes out for his daily recreation—golf, baseball, tennis, polo, billiards, bowling or shooting—it doesn't matter what the sport, the forest serves to satisfy his appetite."

"I don't know about that," interrupted the drummer. "My own particular hobby is horseback riding."

"In which event"—the economist puffed hard to revive his cigar—"your saddle is built on a wooden saddle tree—probably beech from Indiana."

The drummer was conscious of a stifled laugh

from the man from Portland.

"Your average American citizen returns home to dinner," continued the economist. "It is a cool fall day, we will say. A cheerful wood fire in the grate greets him, at which he warms himself and then looks up the children. They are at play with their toys, most of which are made in whole or in part of wood. A child's nursery, by the way, is the most beautiful expression of forest bounty of which I can think. After dinner, he and his wife go to the theater—a movie or a play set to harmonious music, which comes for the most part from instruments



MANY HANDS ARE EMPLOYED, YEAR IN AND YEAR OUT, MAKING DOLLS FOR "OUR LITTLE MOTHERS." IN THIS FACTORY THE DOLLS ARE MADE ENTIRELY OF WOOD—EXCEPTING HAIR AND EYES—AND THEY ARE BUT ONE OF HUNDREDS OF TOYS WHICH THE FORESTS FURNISH FOR THE DELIGHT OF OUR CHILDREN

ARTICLES MANUFACTURED FROM WOOD PULP

THE CASE IS MADE OF WESTERN LARCH, FINISHED WITH FOUR COATS OF VARNISH

ARTIFICIAL SILK YARN

ARTIFICIAL SILK TIE

PAPER FURNITURE REEDS

LINOLEUM - MADE FROM WOOD FLOUR AND LINSEED OIL

PHONOGRAPH RECORDS - CONTAIN 60 TO 80 PERCENT WOOD FLOUR

PAPER PACKAGE TWINE

PAPER RUG YARN

PAPER FURNITURE BRAID

PAPER BINDER TWINE

ARTIFICIAL SILK HOSE

ARTIFICIAL SILK CLOTH

PAPER FLEECE TWINE

PAPER BASKET

PAPER RUG WITH CORE-TWINE BINDING

ENAMELED PAPER YARN

PAPER SEAMING CORD

VISCOSE SAUSAGE CASING

WOVEN PAPER BAG

ARTIFICIAL SILK FLOSS

SHINGLES - THIS SAMPLE CONTAINS ABOUT ONE-THIRD GROUND HEMLOCK BARK

THE MARVELOUS RESPONSE OF THE FOREST TO THE PROCESSES WHICH UNLOCKED THE SECRETS OF ISOLATING WOOD FIBER AND REBUILDING IT INTO A PLIABLE PULP WITH WHICH TO SERVE MAN IN SCORES OF DIFFERENT WAYS, IS BUT ONE ALADDIN-LIKE ADVENTURE IN OUR EXPLORATION OF THE FOREST CUPBOARD. JUST A FEW EXAMPLES OF THE HUNDREDS OF FORMS IN WHICH WOOD ENTERS OUR DAILY LIVES ARE GIVEN HERE. ENOUGH, HOWEVER, TO PROVE, EVEN TO THE MOST SKEPTICAL, THE GENEROUS SERVICE OF THE FOREST TO MAN

in the making of which wood is essential. Furthermore, the film which makes the motion picture possible is made in part of products obtainable only from the forest."

"There," exclaimed the merchant from Portland, slapping the drummer on the knee, "can you beat it?"

"You forget the substitutes," said the drummer, weakly.

"Substitutes? Yes, there are a lot of so-called substitutes for wood," replied the economist. "Some are better than wood for special purposes, but a majority of them are either not so good or not so cheap. All of them taken together make a poor showing against the growing diversity of our demands upon the forest cupboard. I believe that no other material will ever be found which will serve mankind in the multitudinous ways that the forest serves him. You say, let the forests be exhausted because substitutes will be found! You can with more reason say, let the rolling stock of our railroads be used without replacements, because when the railroads have gone to pot, American ingenuity will devise some other system of transportation. American ingenuity, working overtime, has thus far failed to develop a successful substitute for the wooden railroad tie which today is the foundation upon which the transportation system and with it the prosperity of this country rests."

The drummer started to reply, but hesitated.

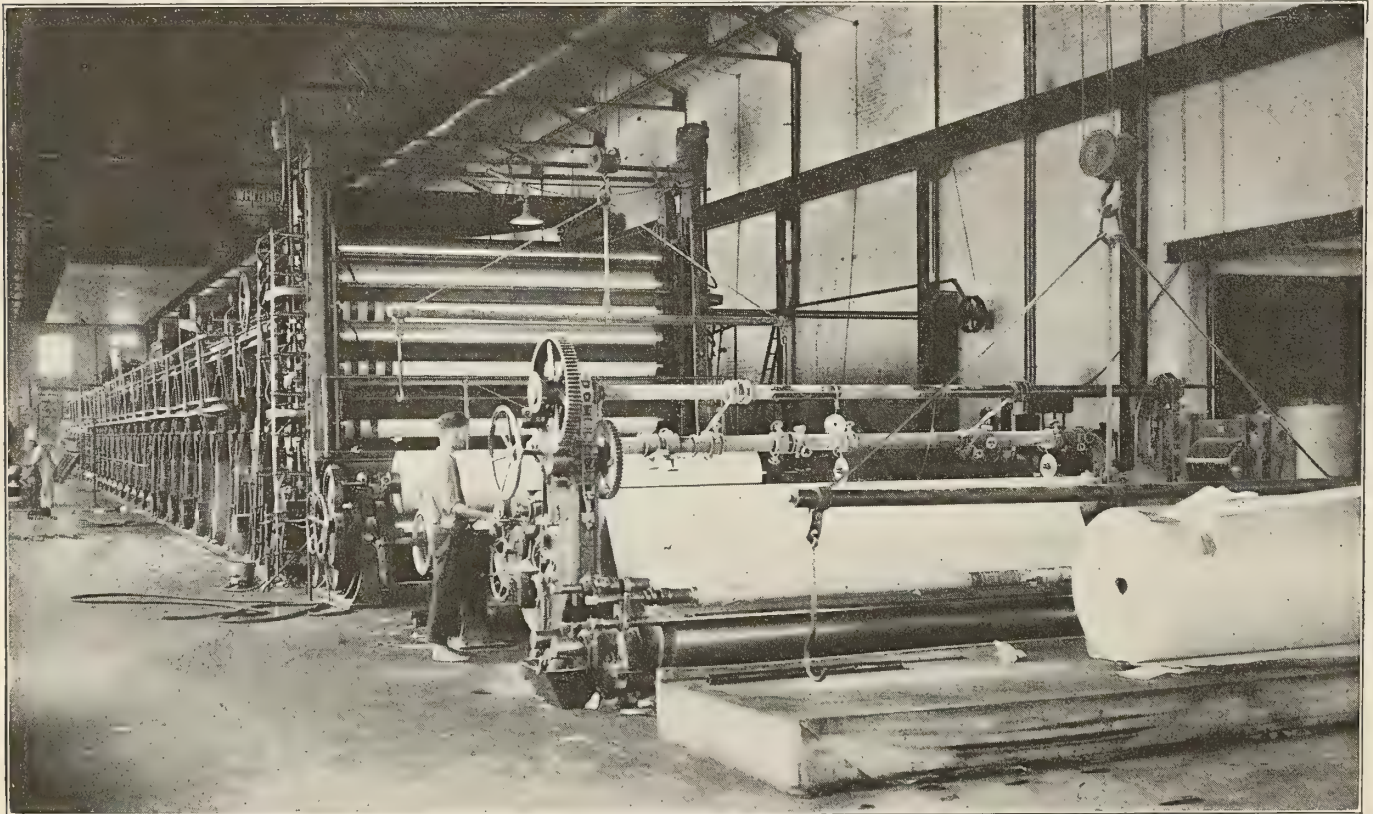
"Just a minute," interjected the economist. "You speak of substitutes. It is not a problem of substitutes. It is a question of maintaining intact the foundation upon which American business has been and still is built. What about the innumerable industries reaching

into every State in the union, engaged in making all these things and hundreds of others from the forests? What of their investments aggregating billions of dollars? What of the banks which are carrying their loans? What of the wage-earners—over a million and a quarter of them—skilled in the forest and woodworking trades? What of their five or six million dependents? Without forests, what would you do with these wood-consuming industries? You cannot make concrete with the equipment of a furniture factory, or steel with that of a mill-work plant, or brick with the machinery of a box factory. What about the ever-growing area of deforested and fire-devastated land—upwards of 325 million acres—which in many regions are actually bankrupting once prosperous communities? I presume that the prostration of sixty or seventy industries throughout the country, which are built upon the primary use of wood, together with disrupted manufacture, causing many more industries which must have wood in secondary ways, would in no wise affect your business, whatever it may be?"

The drummer remained uncomfortably silent.

"It would mean industrial chaos," declared the economist, somewhat warmly. "And yet you say, in effect, let the forests be cut and burned in reckless heed of the morrow, for when they are gone we will never miss them."

The drummer capitulated and admitted that he had never thought of the forests in exactly that way. The economist did not overstate his case. He understated it in that he did not begin to cover the innumerable ways in which the forest has underwritten our homes, our cus-

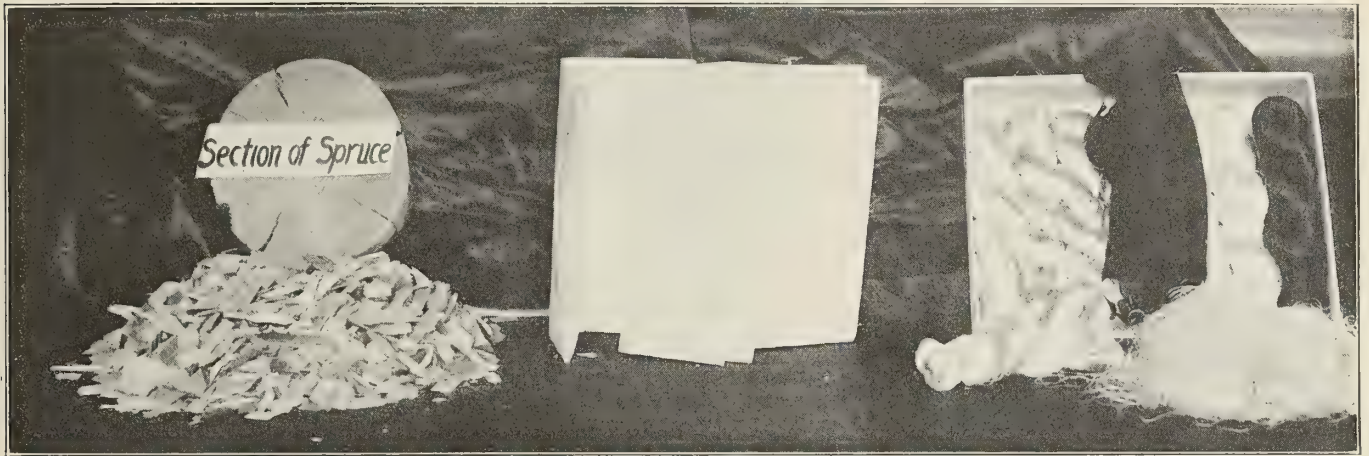


A MODERN PAPER MACHINE, TYPICAL OF THOSE THROUGH WHICH THOUSANDS OF ACRES OF FOREST PASS EVERY YEAR IN ORDER TO SATISFY OUR HUNGER FOR NEWSPAPERS, WHICH REACHES THE STAGGERING TOTAL OF 28,000,000 COPIES DAILY, REQUIRING THE CUTTING OF ALMOST ONE AND A HALF MILLION ACRES OF TIMBER ANNUALLY

toms, our industries, our happiness, and our prosperity. About all our forefathers got out of the forest cupboard was rough planks and firewood. They had no conception of the vast storehouse of potential products hidden away in the darkly flanked forests which stretched from the Atlantic coast westward they knew not how far. But decade by decade, the necessity of American progress and American comfort, driving forward under a lucky star of bountiful woods, has wrested one secret after another from the forest, until today ours is a nation enslaved socially and commercially to a forest appetite unparalleled in the history of nations.

We Americans have no conception of our forest hunger, because our constantly expanding appetites for the products of the forest have not yet been denied. We have been so abundantly fed upon nature-grown forests that we have come to think that wood is as unlimited as

a great and apparently inexhaustible source of cheap paper. Forty years ago our newspapers were made almost entirely from rags. Rag stock was not plentiful and mill prices of newsprint paper were \$7.00 and \$7.50 a hundred pounds—an outrageous price compared to newsprint prices of 1914. Consequently, newspapers were something of a luxury and we got along on an average per capita consumption of newsprint paper of three pounds a year. It was then that the forests began to yield to the alchemy of the chemists, and the sulphite and ground-wood processes of wood pulp manufacture gradually became established. From that time on, the price of newsprint steadily declined until in 1897 it was less than \$2 a hundred pounds and America was getting its evening and morning papers at one and two cents a copy. From 1897 to the beginning of the war the price of newsprint continued to fluctuate around \$2 a hundred



(Photograph by courtesy of the New York State College of Forestry.)

THE WORK OF THE SILK WORM IS NO MORE WONDERFUL THAN THAT OF MAN IN CONVERTING THE TRUNK OF A TREE INTO A SILK OF EQUAL SHEEN. WHAT FUTURE VALUES ARE HIDDEN WITHIN THE BARK OF LIVING TREES IS A STORY NOT YET TOLD BECAUSE OUR KNOWLEDGE OF WOOD CELLULOSE IS YET IN ITS INFANCY

the climate. If forests were used to build houses only, the case would be bad enough, as any one will concede who has studied the standards of home comfort and culture in European countries, where lumber starvation looks out of almost every window. But we have built up a national appetite for raw wood alone in more than fifteen hundred different forms, while our expanding consumption of the forest in converted or chemical forms is one of the marvels of the age. What future values lie hidden in those wonderful laboratories which nature has wrought inside the bark of living trees is a story not yet told.

Today the whole tendency in our national struggle is to drain our forests by developing more and greater uses for wood—a natural and desirable progress provided our forest renewals were keeping pace with our inordinate wood appetites. But they are not. On the other hand, our progress in extracting products of value from the forests is comparable to the story of Aladdin and his wonderful lamp.

Consider the far-reaching influence upon our social and commercial lives of the discovery, after twenty centuries of wood-using civilization, that the forest was

pounds until there was being issued daily in this country an average of one newspaper for every family in the land.

In the form of raw wood there is not a home in the country which this question of the forest cupboard does not reach. Here again in the form of paper it touches every heart and every business. It touches not only those who read, but those engaged in the processes by which the paper is made, those who gather and edit the news, those who print it, the boys in the street who sell the papers, the men and women in the stores who sell the books and magazines, and the great army of advertisers who pay almost a billion dollars annually for space in the daily papers and the periodicals.

In addition to newsprint and book papers, tons and tons of kraft and wrapping paper are supplied every year by the forests. Scarcely a package or bundle enters our home that is not wrapped in wood pulp in the form either of a paper sheet or a paper bag.

But these are by no means the only products made from wood pulp. There are scores of others—things we see and use daily, but which our minds do not associate with the forest because so few of us know that they are forest

products. Of boxes or containers, there is an infinite odd lot, beginning with those the size of half a dollar, in which you carry home in your vest pocket a supply of quinine capsules, and extending through the box kingdom to trunks and great shipping containers used in shipping commodities weighing a hundred pounds and more.

At Christmas, our homes are filled with cardboard boxes, dressed in seasonal garb and radiating delicious mystery. The sight and smell of Christmas trees of pine, spruce, or fir awaken sparks of forest blessings in our hearts, but the million of boxes which do homage at the bases of the trees or hang upon their

lighted branches are forest bounties largely unrecognized and unappreciated. In hundreds of other little utility ways the forest passes through our hands or before our eyes. Most of the tickets, calendars, advertising posters, and cards, as variegated as the autumn foliage, are forest-given products. Whether we go to the movie or book

ourselves for a trip to Alaska, a wood-pulp ticket is probably our passport.

Automobiles are making us more and more a nation of picknickers and if there are any wayfarers who have not yet discovered the convenience of the fiber plate, with its companion pieces of fiber spoon, drinking cup,

napkin and table cloth, they have missed the nub of the simple life. And then what is more useful than a piece of string, especially when you are without it! The forest supplies a great variety of twines. Some have a core of hemp or similar material; others are made entirely of wood pulp. They run the scale from wrapping

twines to clothes lines, driving reins, and shipping ropes an inch or more in diameter.

Often confused with reed furniture, there has come on to the market in increasing amounts in the past ten or fifteen years, a great variety of fiber furniture. It is made from the forest by that same wonderful process



IN THESE HOUSES, WHICH LOOK LIKE THEY MIGHT HAVE BEEN BUILT BY ESQUIMOS, THE FOREST IS REDUCED TO CHARCOAL, AN IMPORTANT MATERIAL IN THE MANUFACTURE OF CHARCOAL IRON, BLACK POWDER, POULTRY FOODS, AND A LARGE NUMBER OF OTHER MISCELLANEOUS THINGS



THIS IS A WOOD-PILE AT AN IRON MINE. WHEN WE SPEND A PENNY, OR SHOVEL COAL IN OUR FURNACES, OR WHEN AN ELEVATOR SHOOTS US UP FLOOR AFTER FLOOR IN A STRUCTURAL-STEEL SKYSCRAPER, WE ARE SELDOM CONSCIOUS OF THE FACT THAT THE FOREST HAS PLAYED ITS PART IN THE ACCOMPLISHMENT OF THESE THINGS. NEVERTHELESS, HUNDREDS OF THOUSANDS OF CORDS OF WOOD ARE USED ANNUALLY IN THE MINING OF COPPER, COAL, AND IRON

by which wood is converted into a pulp of a thousand uses. Fiber furniture comes in practically any form desired, from sewing baskets to breakfast sets. Thence the forest skein leads to wood-fiber rugs, matting, carpets, tapestries, hangings, and linings, woven from fiber yarn into almost any combination of colors, shapes, and designs. More and more the forest is coming to be used to decorate our homes and clothe our bodies. It is a gambler's chance that the first pair of silk-clad ankles you meet in the morning on the way to the office are wearing raiment fabricated from wood.

For many years charcoal has been used as an ingredient

The marvelous response of the forests to the processes which unlocked the secrets of isolating wood fiber and rebuilding it into a pliable pulp with which to serve man in scores of different ways, is but one Aladdin-like adventure in our exploration of the forest cupboard. Other and different processes have brought forth treasures no less wonderful. There is the process of wood distillation by which the forest is made to yield many valuable products. In the old days the charcoal kiln was a common sight in our forest communities. Our early ancestors little suspected that they were getting the least valuable product out of the wood, because they did not know



(Photograph by courtesy of Woodward & Lothrop, Washington, D. C.)

THERE HAS COME ON TO THE MARKET IN INCREASING AMOUNTS IN THE PAST TEN YEARS A GREAT VARIETY OF BEAUTIFUL FIBER FURNITURE, MADE FROM THE FOREST BY THE SAME WONDER PROCESS BY WHICH WOOD IS CONVERTED INTO A PULP OF A THOUSAND USES, AND IN THIS FURNITURE BEAUTY, UTILITY, AND COMFORT ARE COMBINED. SCIENTIFICALLY CONSTRUCTED, IT WILL OUTWEAR MANY OF THE CHEAPER GRADES OF WOODEN FURNITURE

in the manufacture of black powder, but the general suitability of the forests as a source of nitrocellulose has been a much-mooted question. It had not been given a great deal of consideration until the war with Germany stirred us up. With a shortage of cotton staring us in the face, we got busy and found out something which no one has said much about, but which is worth bearing in mind. We found out that in time of war our forests are a second line of defense as a source of nitrocellulose for high-power explosives. Cotton, of course, comes first, mainly because the price of cotton linters has been so low, but should we ever become involved in another war and our cotton crop fail us, our forests could fill the gap in supplying nitrocellulose without a gun growing cold.

that the more valuable products were passing off in the smoke.

Wood alcohol, acetate of lime, wood oils, wood tars, and charcoal—the chief products of wood distillation—may not sound like articles of every-day democracy, but nevertheless there are few days in our lives that some of them do not touch us in one way or another. Wood alcohol is used all over the world. It has gained new uses rapidly. More than 10,000,000 gallons produced annually in this country go into the manufacture of such articles as photographic films, celluloid, formaldehyde, dyestuffs, paints and varnishes, gas mantels, fine soaps, and denatured ethyl alcohol. Motion-picture films are laying an increasing toll upon wood alcohol, as is the post-war

development of the dye industry in this country.

Ask the chemist why the shortage of formaldehyde at the close of the war and he will tell you it was because of a shortage of wood alcohol, which is the only substance that can be converted into formaldehyde commercially. We are pretty much dependent on formaldehyde. A great many thousand people owe their lives to it because it ranks next to sunshine in destroying disease germs. Doctors will tell you that in hundreds of thousands of homes, where persons have died of contagious diseases, the lives of other members of the family have been protected by proper disinfection with formaldehyde. But it doesn't much matter how good our health may be, we sooner or later must resign in its favor, because it is used almost exclusively by our friends, the undertakers, in embalming the dead.

If you pursue further the uses of this forest product, formaldehyde, you will sooner or later find yourself face to face with the greatest wood user in the world, the American farmer. He will be able to tell you how dependent on the forests he is for wood for barns, sheds, pig-pens, egg crates, silos, wagons, implements, kitchen utensils, and so on, but there is not one out of a hundred probably who will admit that the forest has anything to do with how many bushels of wheat, oats or barley he raises to the acre or the price he receives a bushel when the sweat and dust of threshing time are over.

Nevertheless it has—a great deal—and the reason lies in the fact that formaldehyde has been found to be the most convenient and effective fungicide known for the treatment of seed grain against the cereal smuts—those insidious fungous parasites which have been robbing the American farmer and his customers, the American public, of some one hundred million bushels of grain annually.

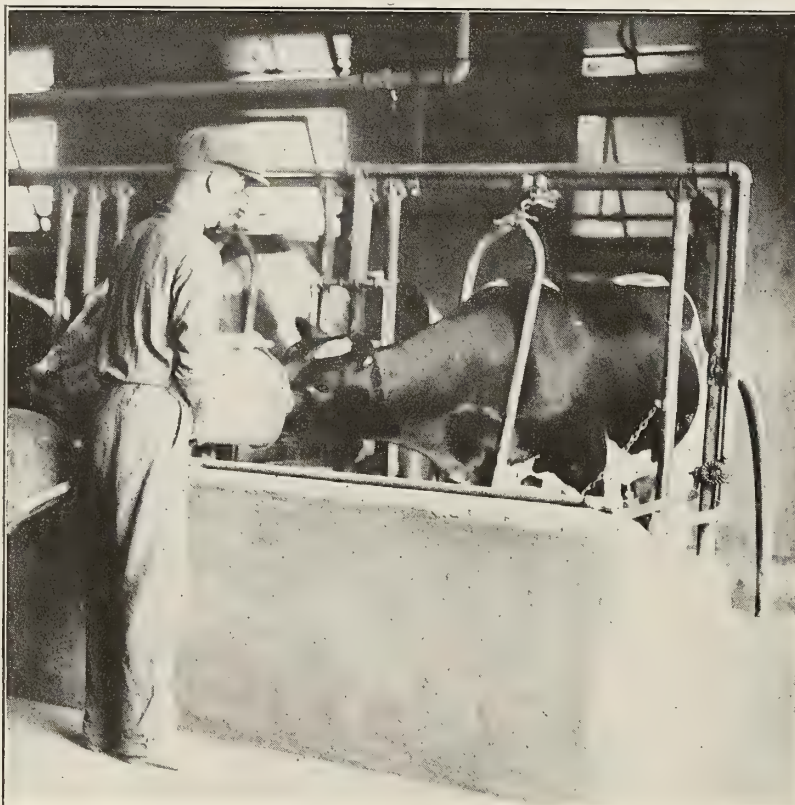
That we may, within the not distant future, run our automobiles on a motive fuel furnished by the forest is by no means impossible. Forward looking automotive engineers in this country are seriously studying the forest as one of several possible sources of motive fuel. The forest product they are thinking about and figuring upon

is alcohol—not wood alcohol, which has already been mentioned as a product of hardwood distillation, but real grain alcohol of the identical chemical composition of that made from grain and potatoes.

The production of ethyl (grain) alcohol from wood is based upon the hydrolysis of wood cellulose, which with certain species gives rise to about 20 to 25 per cent of sugar. From very recent experiments, it looks now as if this process of hydrolizing wood is going to uncover some startling new treasures from the dark recesses of the forest cupboard. These experiments have indicated that instead of ethyl alcohol, presto change! a good grade of cattle food may be produced. This is accomplished

by certain alterations in methods of treating the hydrolized wood, whereby the sugar produced is made use of as a carbohydrate food in a form which not only appeals to the appetite of the bovine but apparently is quite efficacious in producing beef and butter fat.

In justice to the forest, the writer is compelled, even at the risk of outright skepticism on the part of some readers, to introduce our own stomachs to the forest cupboard. A few years ago, a chemist at the Forest Products Laboratory, at Madison, carried home in his pocket one evening a bottle containing a fine white powder. This he presented to his wife with the request that she prepare hot



THE ONLY WOOD IN THIS PICTURE IS IN THE BUCKET. IT IS A CARBOHYDRATED CATTLE FOOD, MADE FROM HYDROLIZED WOOD. NOTE HOW IT APPEALS TO THE APPETITE OF THE COW! AND IT HAS BEEN PROVEN QUITE EFFICACIOUS IN PRODUCING BEEF AND BUTTER FAT

biscuits for their evening meal and that she substitute the powder in the bottle for her regular brand of baking powder. When the biscuits appeared on the table, they were the equal in both appearance and taste of biscuits made from the best commercial baking powders on the market.

What the chemists at this laboratory had done was to make a baking powder from wood. By leaching small chips of western larch in water, they had obtained a high yield of galactan, a water-soluble gum which never before had been found in sufficient quantities to be of any commercial importance. The galactan, when oxidized with nitric acid, produced mucic acid and the chemists knew that mucic acid should be equal, if not superior, to tartaric acid for baking powder. The proof of the

pudding was, to the chemist in question at least, in the eating.

Today there is under operation in the larch region of the West a large plant utilizing larch wood for the commercial production of mucic acid—a product of high purity suitable for the making of both baking powder and artificial fruit flavors. Another wood industry in the making!

Undisturbed by science for more than three centuries, there has developed in this country a secondary forest industry which today leads the world in the value and volume of its products. It predates the lumber industry proper. It is called the naval-stores industry—a name which clings to it from the days when its products were used almost exclusively in ships and on the seas. Today naval-stores are mainly land-used commodities and as such permeate our daily existence in a greater variety of ways than any other forest product, excepting raw wood.

More than half of our production of naval stores—rosin and turpentine—is exported, the United States

leading the world, not only in production but in the amount of exports. Before the war, our exports of both rosin and turpentine were greater than the combined exports of all other countries.

Few Americans have any conception of the great variety of ways in which they make use of these two forest products. To type single spaced a list of all its uses requires more than two pages of letter-size paper. Its most important use is in the manufacture of soap. More rosin is consumed in our family wash-tubs than in any other way, because rosin washing soaps are principally of the laundry variety. About 40 per cent of our rosin production is used in making soap. The next most important uses of rosin are for paint and varnish and as a size or coating for writing and printing papers which must take ink. The rosin is added to the pulp in the paper making and becomes entangled in the fibers of the paper.

A few of the other ways in which rosin has fabricated the southern pineries into our lives is in the manufacture of grease, water-proofing compounds, plastic composi-



A PICTURE OF THE DOCKS AT SAVANNAH, GEORGIA, SHOWING AMERICAN ROSIN ON ITS WAY TO THE MARKETS OF THE WORLD. MORE ROSIN IS USED IN OUR FAMILY WASH-TUBS THAN IN ANY OTHER WAY. THE BULK OF THE WORLD'S SUPPLY OF TURPENTINE AND ROSIN COMES FROM OUR SOUTHERN PINERIES. THESE TWO COMMODITIES PERMEATE OUR DAILY LIVES IN A GREATER VARIETY OF WAYS THAN ANY OTHER FOREST PRODUCTS, EXCEPTING RAW WOOD

tions, including sealing wax, rubber substitutes, shoe makers' wax, roofing cement, cheap linoleum and oil cloth, papier-mâché and grafting wax for trees; pharmaceuticals, including ointments, plasters, cerates, and disinfectants; constituents of wood stains; for setting bristles in hair brushes; the making of fly paper and printing ink; adulterating linseed, castor, and olive oil; water-proofing textiles and cordage, and in the manufacture of lampblack for lithographic work.

Turpentine likewise filters into our body politic in many diverse ways. It is much used, of course, as a thinner for paints, varnishes, and wood fillers, as an ingredient of water-proof cements for leather, rubber, glass, and metals; in the manufacture of disinfectants, liniments, medicated soaps, internal remedies, ointments, synthetic camphor, celluloid, explosives, fireworks, drawing crayons, patent leathers; to prevent "bleeding" in the manufacture of cotton and woollen print goods and numerous other ways which do not bear the mark of the forest.

There are no authentic records of the number of people in the United States who partake of forest recreation at least once during the year, but it is conservative to say that well over fifty million Americans each year draw upon the forest in one way or another for pleasure and health. A few years ago the Forest Service employed a man distinguished in his profession to make a study of the recreational uses of the National Forests. Among other things, he computed the recreational value of the forests and he approached the problem by first determining, from prices prevailing at that time in our amusement markets,

the minimum market cost to the consumer of wholesome recreation in this country. His investigations indicated that for the National Forests area, recreational values were equivalent to five cents an acre a year or an aggregate of seven and a half million dollars annually.

In the East the forests are far more accessible to our dense population center and are consequently more widely used, a fact which serves to increase the recreational value of their acreage. Accepting, however, the figure of five cents an acre as a thoroughly conservative average for our total forest area of 463,000,000 acres, the pleasure producing value of our forests, even in their present depleted state, may be placed at not less than \$25,000,000 annually. In other words, if our forests should be wiped out over night in one clean stroke, we would be deprived during the next ten years of \$250,000,000 worth of recreation. That is putting it at the lowest possible figure, considering forest recreation merely as the cheapest form of pleasure and eliminating potential values. But it is obvious that the human value of two and a half billion hours spent in the forests hunting, fishing, tramping, picknicking, or resting, cannot be expressed in terms of silver dollars.

However we may reflect upon our need for forests, we cannot escape the fact that through childhood to the close of old age, the forest more and more serves us in these ways of marvelous diversity. It has nurtured us from starving and straggling bands of colonists into the richest and most advanced nation of the earth. It has become stamped upon our characters and welded into the marrow of our bones, whether we know it or not.



IN ANOTHER COMPARTMENT OF THE FOREST CUPBOARD ARE THE GREATEST HEALING COMPOUNDS WITH WHICH OUR HIGH-SPEED CIVILIZATION IS ENDOWED. THEY GO UNDER THE COLLECTIVE BRAND OF "FOREST RECREATION" AND THEIR CURES ARE OF THE BODY, THE MIND, AND THE SOUL

We are a forest-built nation socially and industrially. Do we dare, upon thoughtful consideration, to allow one corner of our foundation to slip from under us? Instead of becoming less dependent, we have become more and more dependent upon the forest as it has yielded new products upon which new industries have been built, new communities formed, and our standards of culture advanced. This is as true today as it was fifty years ago, because the full service of forests to man has not yet been reached.

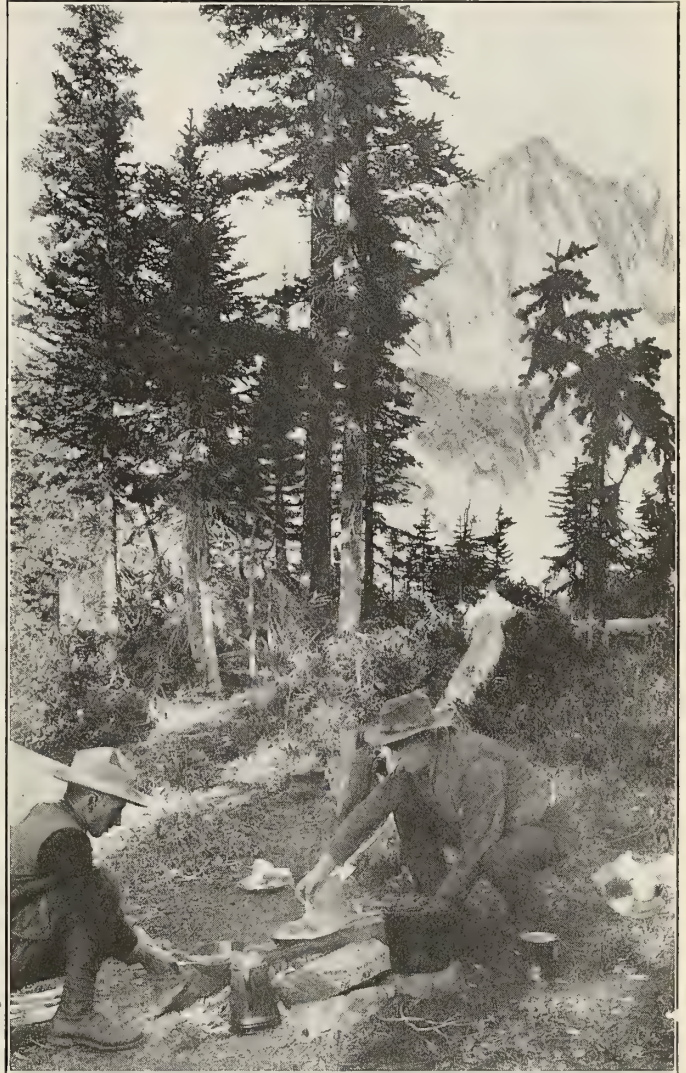
Today the pinch of empty shelves in the forest cupboard is beginning to make itself felt and we are approaching the threshold of a great forest hunger. Already we have destroyed three-fifths of our original virgin forests, sixty per cent of what remains is west of the Rocky Mountains. States such as Pennsylvania, New York, and Michigan, which only a few years ago were supplying their own people with lumber and exporting great quantities, are today importing lumber from as far as Puget Sound—two and three thousand miles distant—at transportation costs aggregating millions of dollars annually. These and many similar facts are clearly discernible danger signals.

For years men held our forests to be inexhaustible. Their very abundance bred their waste, neglect, cheapness, and dissipation. It undermined the appreciation of forests which such wise and sturdy pioneers as William Penn sought to instill into his generation. We fell into the bad habit of taking for granted Nature's perpetuity of forests and of forgetting that trees are a plant crop, which, to be perpetuated, must be grown on a three-score and ten years' rotation as our wheat, corn, and cotton crops are perpetuated on one-year rotations. We "passed the buck" to Mother Nature and we have since then been dispossessing her with fire, poorly adapted forest laws, and unrestricted pillage of forest soils.

Is it any wonder then that Nature is able to restock our forest cupboard with just one tree to every four we consume? Nature, once robbed of her forest-growing vitality, is a hard taskmaster. Conceive, if you can, what would happen if Congress in the dark hours of the night should pass an unheard-of law so restrictive that the farmer could raise only one bushel of wheat to every four we are now consuming. We would rise up with a wrath new in the annals of democracy and make short work of that law, because we appreciate the intimate relationship between wheat and three square meals a day.

But the fact that our forests are slipping from us at a

rate of four to one fails to arouse us from a sleeping sickness of unappreciation. Rich with blessings derived from the greatest God-given forests known to man, we smugly read our little children the jingle of Old Mother Hubbard and her poor dog, while behind the swiftly moving stage of forest depletion their day of a barren



THE SIZZLE OF BROOK TROUT IN THE FRYING PAN, THE ODOR OF STRONG COFFEE FROM AN OLD BLACK POT, THE WARM, FRIENDLY WOOD-ASHES SMOKING LAZILY, AND ABOVE IT ALL THE PUNGENT SMELL OF BALSAM—WHO IS SO BOLD AS TO ATTEMPT TO VALUE THAT BIRTHRIGHT IN TERMS OF PIECES OF SILVER?

forest cupboard and a great forest hunger waits on our apathy. [Photographs by courtesy of the U. S. Forest Service except where otherwise specified.]

EDITOR'S NOTE.—This is the first of a series of twelve articles on important phases of our forest problem. The second article, "AMERICA'S TRANSITION FROM OLD FORESTS TO NEW," by E. T. Allen, forest economist of the Western Forestry and Conservation Association, will begin in the February issue of AMERICAN FORESTRY.

Forestry and Our Land Problem

BY HENRY C. WALLACE, Secretary of Agriculture
[An Authorized Interview for American Forestry]

SEVERAL months ago a number of commercial organizations requested the Department of Agriculture to mobilize its scientific forces upon the problem of what to do with the cut-over timber lands in the Southern States. As the outgrowth of this request, a standing Committee on Land Use has been created. It contains a farm economist, a soils expert, a live-stock man, a farm-crop man, and a forester.

"The immediate work of this committee," said Secretary Wallace, "is to work out a program which represents the best experience and technical skill which the Department of Agriculture can bring to bear upon the use of the 90,000,000 acres of cut-over land in the South. But its work cannot stop there. The rational use of land, the same correlation of timber crops with live stock and food crops, based upon the factors of soil, climate, and market, is one of the foremost problems of the whole United States.

RATIONAL USE OF LAND

"American agriculture has received a terrific jolt during the past four years. Changes both at home and abroad brought about by the war and by economic developments since the war make it necessary for us to resurvey our agriculture. Those of us who are living pretty close to

the farmer and his problems during these trying times have become convinced that the expansion of cultivated land in the United States is due for a slowing up, that tillage will have to be contracted on a lot of the poor land along the margin of successful farming, and that for some time to come American agriculture will tend to concentrate capital and labor upon the best soils and in the regions most favorably located in relation to the principal food markets. We must find a profitable crop which can be grown cheaply, with little labor, on land which the plow will pass up. On much land of this kind Nature is ready with the crop—timber; and the needs of the day are ready with the market.

THE NEEDS OF THE DAY

"Long before the great war reset the stage on which the American farmer must play his rôle, the necessity for plan-wise growing of timber as a staple crop was very clear. An enormous acreage of logged-off land had piled up on which there was not the remotest prospect of cultivation. It is still piling up at the rate of four or five million acres a year. The abandonment of plow land in a good many States was throwing other millions of acres out of employment and partially depopulating the regions



FOR LAND WHICH THE PLOW HAS WORN OUT, WE MUST FIND A NEW CROP, AND ON MUCH OF SUCH LAND NATURE IS READY WITH THE CROP—TIMBER. THE PHOTOGRAPH SHOWS A NEW FOREST IN THE MAKING. FROM AN OLD WHITE PINE, NATURE HAS SOWN THE SEED AND TOUCHED THE SOIL WITH LIFE



AS THIS PICTURE, TAKEN IN THE CUT-OVER PINE COUNTRY OF GEORGIA, SO CLEARLY SHOWS, NATURE IF GIVEN HALF A CHANCE WILL "PUT OUR UNPLOWED ACRES TO WORK GROWING A PROFITABLE CROP FOR WHICH THERE IS NO GLUTTED MARKET; REPOPULATE OUR DESERTED FOREST REGIONS AND ABANDONED FARM DISTRICTS, GIVE THE EARTH AND THE PEOPLE SOMETHING TO DO." THIS HEALTHY YOUNG FOREST IS THE RESULT OF THREE TO FIVE YEARS OF FIRE PROTECTION

which contained it. The pasture pine in New England and the old-field pine of the South bear testimony to the reversion of large areas of plow land to the chance forest sowings of Nature. In the decade between the last two census years, the area under cultivation decreased in 19 States. New England lost 32,000 farms with a shrinkage in improved farm land of 1,140,000 acres. New York, New Jersey, and Pennsylvania lost 43,230 farms. The old order of land use was changing and is still changing in many of the densely populated States of the East. A new order of land use must take its place. The realignment of agriculture forced upon us by the great war will give it tremendous impetus. I can conceive of nothing more important than an intelligent co-ordination of rural effort that will afford profitable crops for lands which cannot economically be tilled.

THE NEW ORDER OF LAND USE

"And just as the land economist was wrinkling his brow over this problem came the national need for timber knocking at the door, indeed bursting right through it. While the old order in American farming, under which men reached out constantly for more raw land, has changed into a new order which impels contraction, our national timber supply has been silently and steadily disappearing. One forest region after another has been swept over. The average carload of lumber has had to be hauled farther and farther from the sawmill which made it to

the farmer or city man who put it into his home. Last year, I believe, the country hauled something over two million carloads of lumber an average of 485 miles and paid \$275,000,000 in lumber freight bills.

TIMBER—THE NATIONAL NEED

"And meantime our dependence, as a people, upon our forests has increased enormously. We use five times as much forest-grown paper per capita now as we did 30 or 40 years ago. We manufacture half of all the lumber produced in the world and use 95 per cent of what we manufacture right here at home. American factories make more things out of wood than the factories of all the rest of the world combined and use more wood between them than the factories of all the rest of the world put together. Every year our keen business men and scientists discover how to make new things from wood to supply human needs. Our national life and commercial supremacy have been built up upon the liberal use of forests—and our forests are rapidly disappearing.

TWO BIRDS OF ILL OMEN

"The answer is so plain that he who runs may read it. Here are two big birds of ill omen to be killed by one stone. We can put our unplowed acres to work growing a profitable crop for which there is no glutted market; repopulate our deserted forest regions and abandoned farm districts; give both the earth and the people something

to do; and meet the impending shortage of forest products—by growing wood, east, west, north, and south as part of a rational scheme of land use, with somewhat the same intelligence and skill that we put into the growing of cereals and fruit. National reforestation should command the interest and support of every thinking American citizen.

"It would doubtless be best for the country if some law could be passed under which forthwith every one would proceed to grow trees. But we know that great economic changes of this kind affecting the habits of people in the use of their land necessarily move slowly. It cannot be accomplished in a year or by any single piece of legislation.

"As such things go in the attitude of nations toward their natural resources, we have already moved pretty rapidly. It was only about 30 years ago that the first



THE LAST OF A ONCE GREAT TRACT OF WHITE PINE IN WISCONSIN. WHEN THIS FOREST IS CUT, WHAT OF THE LAND? "JUST AS THE LAND ECONOMIST WAS WRINKLING HIS BROW OVER THIS PROBLEM, CAME THE NATIONAL NEED FOR TIMBER KNOCKING AT THE DOOR, INDEED BURSTING RIGHT THROUGH IT"

National Forests were created. It was only 25 years ago that the first ideas on the protection and management of public forests were written on our statute books. It was only 11 years ago that we started to buy forest lands for the protection of navigable streams. Within the last dozen years fifteen States have enacted laws dealing with the protection and regrowth of their forests and the area of private forest land receiving some sort of protection has increased from 61 million to 166 million acres. The country is taking its forest problem seriously and ground has been gained pretty rapidly. Nevertheless, beyond any question, the time has come for another step forward. We still have a long way to go in evening things up with our forests. As long as we are cutting them down at the rate of 50 cubic feet per acre every year, while something less than 15 cubic feet is being grown, as long as our private forest land, one-fourth of the soil

of the country, is largely threatened with idleness, we are headed for disaster.

"The final answer to all these questions doubtless will require rather far-reaching legislation under which the care given to forest lands and the regrowing of timber upon them will be under a measure of public control. I doubt, however, if this answer can be written until the people have been more thoroughly educated on these questions and have thought them out to a more mature and more generally accepted conclusion. Meanwhile, we should lose no time in going right ahead with the obvious things that should be done. We can write another chapter in the national forestry policy of the United States right now along the lines of what has been well tested and found good. This will not be the last chapter, but it will represent real progress.

"The first thing which it seems to me the Federal government should do is to consider its own opportunities. It is illogical, not to say absurd, for the nation to be buying forest lands in order that they may grow timber, and for the nation to be preaching reforestation to private land owners, while at the same time failing to protect and conserve the forest growth on large areas of land which it owns itself. The logical expansion of the National Forests to embrace all of the lands in Federal ownership most useful for timber growing or water conservation was blocked several years ago by opposing interests and statutory limitations. There are at least eight million acres of such lands in the continental United States, besides an enormous area in the interior of Alaska. There are large areas of timber land in Indian Reservations which are now well managed but will ultimately be liquidated as tribal properties and opened up for general disposition. There are considerable areas of forest-growing land in military and naval reservations, which should produce continuous and well-grown crops of timber, while at the same time serving the purposes of national defense for which they were established. A policy means an established principle which governs action. It ought to be an established principle in the United States that all lands which the nation itself owns or controls and which will render their greatest service in growing timber or conserving stream flow should, after this fact has been authoritatively ascertained, be incorporated in the National Forest system.

IDLE LANDS THREATEN DISASTER

"A second line of development which has already been well tested is the extension of the National Forests by purchase on the watersheds of navigable streams. It has been a great revelation to me, in my 18 months as a member of the National Forest Reservation Commission, to see what a valuable public property has been built up during the eleven years since the passage of the Weeks Law and to learn in how many ways these purchased lands are helping to work out the forest problem of the country. And it has also shocked me to find out that the denudation of forest lands is going on seven times as fast as public



IN THIS CASE THE LAND WAS LEFT TO FIRE AND UTTER DISREGARD—ABANDONED TO THE ENEMIES OF NATURE. AND THE RESULT? WELL, SEE FOR YOURSELF. WHAT DO YOU OFFER FOR IT?

forest ownership is being extended. While the national government and the States and municipalities, all combined, have been acquiring about 10 million acres of public forests or forest parks, 69 million acres of timber land have been cut over and to a large extent denuded and fire swept.

"Obviously the national government cannot acquire all of the forest land in the country nor any considerable part of it. Obviously forestry practice must reach and grip the private timber owner. Nevertheless, the creation of more National Forests on key areas is a mighty sound and helpful thing. By key areas I mean limited tracts where Federal ownership will be of special value in protecting stream sources, growing timber, and giving the local people a practical demonstration of fire protection and good forest management. I would like to see National Forests in all of the forest regions of the East such as we have now in all of the forest regions of the West. Each of them would become an educational center of the highest value. Around each of them would grow up co-operative arrangements with land owners for forest protection, practical examples of growing and harvesting timber, the inculcation of the forestry idea. Practically every nation of Europe has built up its forest policy around a core of publicly owned forests; and the United States should profit by their experience. We ought to lay out a program of forest acquisition, adjusted to the resources of the Treasury, under which this work can go forward steadily without the yearly peril of interruption. And we ought to encourage States and municipalities to do the same thing.

"A third plank in an immediate forestry platform, and it might well be put first, should build the co-operative protection of our forest lands right up until it embraces every one of the 39 States and every one of the 450 odd million acres. Among the foolish and thoughtless wastes to which the American people are prone, I doubt if there is any more senseless than burning up year after year millions of acres of young forest growth, to say nothing of the merchantable timber and homes and lives frequently destroyed. To permit this to continue, with the scarcity of timber now so plainly written on the wall and with the known inability of most of this land to grow any other crop except timber, would be inconceivable national apathy. We have already made a good start. Twenty-six States are now co-operating with the Federal government in plan-wise forest protection, which covers in a way about half of the privately owned woodlands of the country. We ought to build on



WHILE IN THIS CASE THE LAND WAS PROTECTED AGAINST THE ELEMENTS OF MAN-MADE DESTRUCTION AND TODAY BEARS A 35-YEAR-OLD CROP OF NORWAY PINE, WHICH IS NOT FOR SALE

this foundation with a Federal law which states the policy more clearly than has yet been done and gives the Department of Agriculture a mandate to ask every State which contains forest lands to join forces with it. Once forest fires are brought down to a point where timber-land insurance becomes feasible, we will have gone far in actually restocking our cut-over lands and in encouraging reforestation as a commercial undertaking.

"There are, of course, other things that ought to be done without more waste of time. The national government ought to expand its facilities for research in timber growing and timber use. The time is ripe for interesting American business in growing wood. The necessity is here for interesting American business in the most economical and efficient use of wood. These practical needs of the situation ought to be met to a fuller degree than the public agencies are now able to do. The nation would do well to make a special point of encouraging the planting of forest trees. We are now

planting about thirty-five million every year, States, land owners, and National Forests all combined. But this represents less than 40,000 acres, and with our enormous accumulation of burned and idle land, that is indeed a small drop in a big bucket. I would like to see the

Federal government offer financial co-operation to any State in growing and distributing forest-planting material at cost.

"There is an urgent call that we make ourselves a forest-growing nation. Our day of timber mining is over. Our idle lands are calling for something to grow. Our markets are calling for a larger supply of forest products. We

cannot do everything at once. Here are some specific things that we can do, that have been well tested by experience, that will represent more ground gained. Perhaps they are still too incomplete to be dignified by such a term as a National Forestry policy. At all events they constitute to my thinking a workable and attainable program.

"Some people seem to have the notion that the National Forests should be administered simply on the theory of disposing of the timber after the manner in which private forests have been administered. The Department looks upon the matter very differently. Ripe timber



"OLD FIELD PINE OF THE SOUTH," SAYS SECRETARY WALLACE, "BEARS TESTIMONY TO THE REVERSION OF LARGE AREAS OF PLOW LAND TO THE CHANCE SOWINGS OF NATURE." AND HERE YOU SEE ONE OF THESE CHANCE SOWN YOUNG FORESTS, WHICH AT THE AGE OF FORTY YEARS IS A CROP WORTHY OF OUR CONSCIOUS EMULATION ON A LARGE SCALE

should be harvested as it is needed, but in such a way that other trees will grow to be harvested in the future. For years our forests were treated as if they belonged to the present generation. Now we see that conservation of our forests is one of the greatest of our national problems.

Outlook for Forestry in Pennsylvania

By GIFFORD PINCHOT

PENNSYLVANIA has been, but is no longer, grossly negligent in the treatment of her forests, which have contributed so largely to the prosperity of the State. Until 1890 she was able to supply her own timber needs and export a balance. Today she must import 84 per cent of the lumber she uses, 74 per cent of the products needed for pulpwood, and 75 per cent of the timber required for mining in the anthracite region. Pennsylvania's dependency upon outside sources of wood costs her at least \$100,000,000 a year.

"The forest lands of Pennsylvania have not only been cut; they have been burned again and again. Their productive capacity has thereby been reduced to one-tenth of what it should be. They should be growing a cord of wood per acre annually—they are actually producing only one-tenth of a cord. The job ahead—and it is a big one—is to restore them to reasonable production.

"A start in the upbuilding of the State's forest lands has been made. The State Forest Department is now organized to attack the forest fire evil aggressively. It has a State-wide organization, which, in co-operation with local organizations and individuals, is actively preventing, detecting, and suppressing fires. A liberal appropriation for forest protection granted by the last Legislature has made it possible to supply observation towers and telephones and to equip the men with fire-fighting tools. The beneficial effects are being reflected in the smaller size of the average fire.

"The Department is energetically preaching and teaching better forest practice throughout the State. Advice and assistance in timberland management and in planting are being given to numerous forest owners. The public is being kept informed through the press and through publications, talks, exhibits, and other educational means of the forest situation and of what should be done to improve it. Better co-operation than ever before is being secured from timberland owners, railroads, fire-protective associations, boy scouts, and many other agencies.

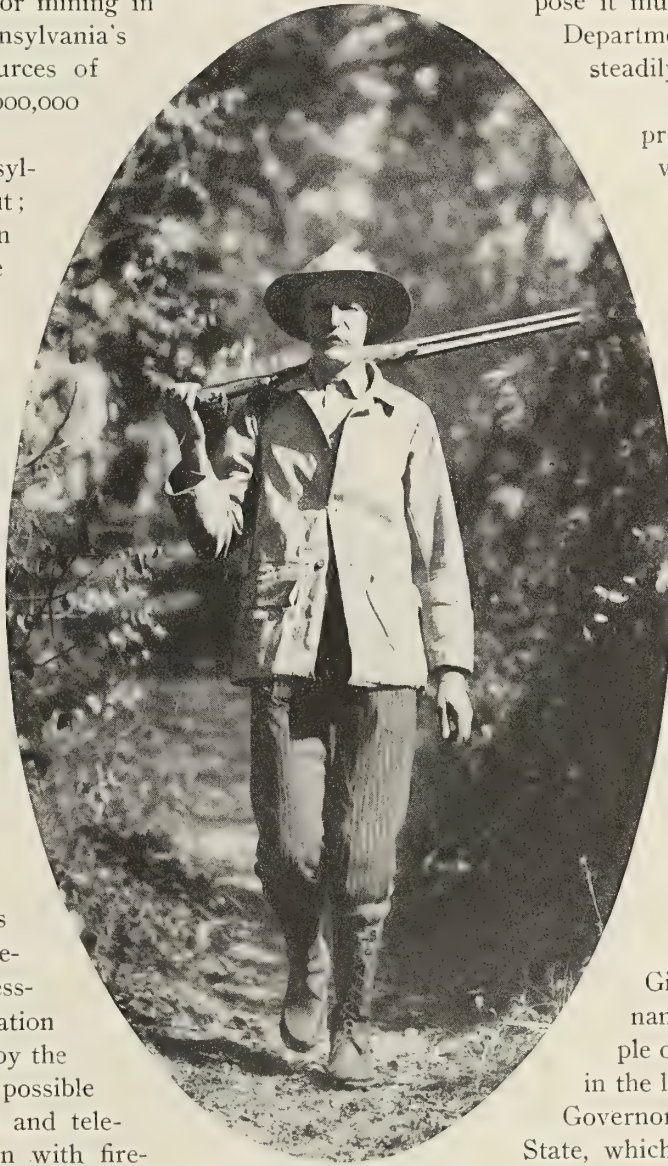
"To restore the forests of Pennsylvania will require long, hard, consistent work. The fight against fires must be incessant. Nothing but protection and care can bring these lands back to full productive capacity. In order to assure the needed timber supply of the future the State must continue to take the lead in forest protection, acquisition, and management. For that purpose it must maintain an efficient Forest Department and must push the work steadily.

"Forest protection is the key to progress in forestry in Pennsylvania and the heart of it lies in the rapid acquisition by the State, under a bond issue, of the hundreds of thousands of acres of idle land, which, if not made productive by the State, will remain idle indefinitely.

"The outlook for forestry in Pennsylvania is bright. The public is better informed on the forest situation and is co-operating with the Department of Forestry more effectively than ever before. With its continued support, there is at least a reasonable chance that Penn's Woods will be restored in time to save the State from the worst of the punishment from the timber famine which threatens it now."

The foregoing statement by Gifford Pinchot, whose very name spells "forestry" to the people of America, is of special interest in the light of his recent election as its Governor of Pennsylvania. The Keystone State, which has already made wonderful progress in the conservation and perpetuation of her forests, has now come into her own. When the result of the Pennsylvania

election was known the American Forestry Association sent this message to Mr. Pinchot: "The American Forestry Association extends to you heartiest congratulations on your splendid victory and greets you with keenest delight as the newly-elected Governor of Pennsylvania. Your overwhelming majority is a clear victory for the high standards of leadership and accomplishment which have marked your distinguished career as a forester and a public servant. Indirectly it is a victory for American forestry, to which you have given so much of your life."



PENNSYLVANIA'S
FORESTER-GOVERNOR

Forest Curiosities

BY ARTHUR H. CARHART

IN a realm all his own, which has never been extensively invaded by tourist hordes, in silent majesty, stands the "King of Ireland." On his face can be seen all the smug complacency which becomes a king. No court jester could win a smile from the kingly countenance. His face has been unmoved by passing pomp and poverty for many years and with the elements kindly disposed it may remain so for many years to come. For the "King of Ireland" of the Shoshone is solid stone! Long live the King!

The interesting bit of rock, standing in one of the side canyons of the Shoshone, which has been graven by wind and rain into an astonishing likeness of an Irishman with pipe in his mouth and crowned by a rock diadem of mammoth proportions, has been christened the "King of Ireland." At no place has Nature shown such art and humor combined as in this piece of sculpturing. The turned-up nose and the rounded cheek keep company with a brow as well proportioned. The crown can be discerned easily. But most unusual of all is the presence of a piece of rock that extends out from the lips of the "King," forming the stub of a pipe. The likeness to a son of the Emerald Isle is complete, while the presence of the stone crown surely signifies that he is a king.

Many who read this have seen the unusual rock formations along the Cody Road through the Shoshone National Forest and leading to the Yellowstone. Many more who here learn of the "King" for the first time will travel the road. But it is probable that no more than one person in five hundred will come to the court of the "King." It is not difficult of access. There is no

formality. One need not even have clothes for a state occasion. And there is no long walk to where the "King" may be viewed. The point is that few know that he is there just a few feet from the main road. So many

miss this wind-carved statue of immense proportions which is among the wonders viewed in quantity along the Cody Road of the Shoshone. On your next trip over this road ask the local forest man where you may find the "King of Ireland" statue. Directions given here would be entirely inadequate, and only when you are near the "King's" court and talking with a neighbor of his can you get the best information as to how to reach his presence. But if unusual manifestations of Nature's forces interest you, by all means take the time and trouble to get acquainted with Shoshone's "King of Ireland" rock.

The area in which the King presides is rich in the carvings of wind and rain. Here are the "Goose Rock," a queerly proportioned goose-like structure; the "Mr. Punch" rock, where the outline of the classic features of Punch may be seen, and still another rock presents the outline of an old woman going into a cabin with a bundle of clothes on her head. This cabin even has a window in it to make the likeness complete. Still another section along this road of the Shoshone has an area called "the Garden of the Goops,"

where many fantastic shapes are found; and near the King of Ireland himself there is a rock called the "Madonna" rock, for it resembles a mother holding a child in her arms. But none are more interesting than the "King" and few rock formations anywhere equal this eccentric carving done by Nature while in a freakish mood.



THE FAMOUS STONE "KING OF IRELAND" ON THE SHOSHONE

Carved in the solid rock by Nature in a humorous mood, the grotesque King gazes calmly and majestically out over the valley he commands.

Reforestation of Bible Lands

By JANE HILL

A CONSTRUCTIVE program for the reforestation of Bible lands is being inaugurated by the Near East Relief, the organization chartered by Congress to relieve the distress of the people of the famine-stricken and war-torn areas of the Levant.

Palestine today is for the most part a treeless country, all its forests having been improvidently destroyed to provide building material and fuel. Yet it is a country which

agricultural prosperity of 2,000 years ago will be made possible when the war orphans under American care become skilled in the scientific methods of farming and reforestation which is a part of the educational curriculum in Near East Relief orphanages.

The name "Jericho" means "Place of the palm's fragrance." The palm grew naturally, without cultivation, all along the valley of the Jordan. In southern Syria, along the busy maritime coast from Beirut to Acre, great palm groves greeted the eye of the Roman traveler. Tyre and Sidon were surrounded by palms. Phoenicia took its name from them—the "Land of Palms."

The passing of the palm trees from most parts of Palestine has certainly served to add to the prestige of the few specimens that remain. There are a half-dozen beautiful trees in Jerusalem and a fine group surrounding the mosque at Nablus. The most striking spot on the whole coast of the Sea of Galilee is the little palm-tree oasis which greets the traveler at sunrise from the window of his hotel at Tiberias. In the valleys beyond Nazareth an occasional stately palm is encountered, and in Damascus there are several fine specimens. It is along the seashore between Acre and Beirut, in Syria, that they are most abundant, and here they are fighting a useful battle against the encroachment of the sands,



SOME OF THE NEAR EAST RELIEF ORPHANS AND THE CYPRESS TREES THEY HAVE SET OUT ON THE ORPHANAGE GROUNDS AT SIDON

needs large forest reserves and which cannot prosper without them.

Gone are the cedars of Lebanon, save for one small hollow on the northwest slopes of the mountains. Gone are the oaks of Abraham, save in the table-lands of Gilead, where Absalom was caught in the low-hanging branches of one of the large trees of Bashan. Most of the sycamores and the oleanders have also been sacrificed. Even the palm trees, once the glory of the land, are almost extinct.

The loss of the picturesque palm is perhaps regretted the most of all, because it is by far the most beautiful and most characteristic of all the trees of the Holy Land. In the old Roman days the palm was universal throughout the country. Nowhere else in the Roman Empire did the tree grow so beautifully and uniformly in its stateliness. The palm tree was imprinted on the old Roman coins as the national emblem.

Jericho was once surrounded by a palm grove seven miles in width, and in those days must have been a city well worth visiting. Today every vestige of the old forest has disappeared, and the plain around the city, once well watered and fertile, is now the desert site of a group of squalid hovels with a degenerate population of not more than 250 souls. To renew the

which a few years ago threatened to engulf all the fertility of these maritime plains.

Agricultural conditions, of course, are entirely different here from those in European and American countries. Palestine cannot hope to produce great forests like those of the United States; but it is faced with a rigorous necessity of producing its own fuel and building material, and some of the foreign agricultural colonies in



A NEAR EAST RELIEF FARM IN BEIRUT WHERE WAR ORPHANS ARE TAUGHT HOW TO PRESERVE THE TREES. A GROUP OF OLIVE TREES IS SHOWN IN THE LOWER RIGHT-HAND CORNER OF THE PICTURE



SIX LITTLE ORPHANS SEATED ON A BENCH BETWEEN THE PEPPER TREES AT SIDON

Palestine have already proved that this can be done without difficulty.

Most of the war orphans under American care in Bible lands expect to remain there as farmers and artisans. Therefore the importance of the re-

forestation of the country is emphasized in the industrial training classes. Economically speaking, the Holy Land is dependent on sound agriculture, irrigation, and forestation.

Realizing that the future of the Near East rests largely on the 100,000 kinless children generous, farseeing Americans are providing for until they are old enough to look out for themselves, the Near East Relief is making every

effort to give them the kind of training that will be most helpful in rehabilitating the country. To this end the school day is divided to allow the children to spend part of the time acquiring a rudimentary schooling and the other part in practical industrial accomplishment.

It is interesting to reflect that the youngest of the great Christian nations is teaching children, in the lands where Christianity had its birth nearly 2,000 years ago, how to preserve the ancient date palm that boys and girls scattered in the pathway of Christ on his triumphal entry into Jerusalem five days before he was crucified.



AN ORPHANAGE AT SIDON, WHERE THE CHILDREN UNDER AMERICAN CARE HAVE SET OUT LOCUST TREES

Forest Legislation in Quebec

"At the present session of the Legislature of the Province of Quebec," writes Ellwood Wilson, "it is likely that the Minister of Lands and Forests will bring forward legislation which will be a great step in advance, and will much improve the forest-fire prevention situation if it should be passed. This legislation will probably take the form of requiring organized municipalities or parishes to appoint a fire ranger, who will be responsible for fighting forest fires and will be authorized to call on any able-bodied citizens for help. The cost of this fire fighting will be borne by the municipality, which will also be responsible for damages, which damages can be charged back to the individual land owner on whose lands the fires start.

"This will serve to impress on all the population the seriousness of forest fires, and by touching the pockets of the farmers and settlers will make them realize the necessity for taking every possible precaution to prevent fire.

"A further step which would be of value would be that of fixing a standard low rate of wages for men who were called out to fight forest fires, so that there would be no temptation to set fires in order to get work.

"The Government of Quebec realizes the necessity for fire prevention and better methods of cutting, in order to put its lands on a sustained yield basis. Much progress has been made in the last few years, and if the program of the present Minister is carried out, Quebec will soon be in the very forefront of forestry progress.

"The scheme which is being talked of is to combine under the Minister of Lands the control of Fish and Game and Mines. This would enable the surveillance

and control of all parties who might have any business in the woods, and would permit of the full value of the law requiring permits to travel over Crown lands, and would co-ordinate all the interests in the forest. The idea would be to divide Crown lands up into districts, each one under the control of a resident forestry engineer, who would be responsible for the care of his territory, supervision of logging operations, fish, game, and inspection. Living in the woods he would become well acquainted with his territory and with its needs.

"The system of joint inspection by company and Government foresters previous to cutting, and later the inspection of logging operations, has worked out well this fall, and has resulted in much closer utilization by taking lower stumps, smaller tops, getting out all wood which it would be possible to utilize, and in preventing cutting of trees which are not yet mature, and also the too great opening up of stands. It has also further aided the companies by preventing cutting contrary to Government regulations, thereby greatly reducing the fines which will be imposed, and which in past years have amounted to very large sums.

"At the last session of the legislature a law was passed that any one who wished to operate in any other way than according to the diameter regulations already established, would have to submit a working plan, giving an inventory of the wood on the tract which it was proposed to cut, the rate of growth, and general methods of felling. There was much opposition to giving this information to the Government at first, but nearly all the limit holders have now seen the advisability of carrying on operations in this way, and are co-operating with the Government."

The Romantic Parasite

BY LELA COLE KITSON

DURING the holiday season carload after carload of mistletoe is used in festive decoration, but just where it comes from and how it grows—what its fragile beauty costs our native tree life—rarely enters into our thoughtless consideration. That it must have forest trees on which to thrive, and that this thriving means,



A TREE SO HEAVILY LADEN WITH MISTLETOE THAT IT APPEARS TO HAVE AS DENSE FOLIAGE IN WINTER AS IN SUMMER

eventually, the death of the tree, are facts surprisingly little known.

The Mexican name for the mistletoe is "Muérdago," which means "the killer." When the Conquistadores pushed their way up the broad Rio Grande valley on their journey to the Pueblos of northern New Mexico, they found the groves of cottonwood trees which lined the muddy stream's banks attacked by a vivid green shrub which seemed to literally bite the trees and suck their life-blood, hence the picturesquely descriptive name for the handsome plant which we of the North have revered since prehistoric times as "the romantic parasite."

Held sacred by the Druids and credited with magical and medicinal properties by the ancient peoples of Europe, the mistletoe has claimed recognition in every age, and still exerts a singular influence in the affairs of mankind. Doubtless many a romance of A. D. 1923 if

traced back to its source would lead to a sprig of innocent-looking withered leaves suspended over a doorway, and each year finds our literature further enriched with poetic reference to this little green monster whose true nature we prefer not to think about.

Of late years the Southwest has contributed large quantities of mistletoe for holiday decoration, and most of this has come from the great Mesilla Valley of the Rio Grande where the cottonwood flourishes in great numbers. The Southwestern members of the *Loranthaceæ* family may be roughly divided into two groups: the mountain mistletoe and the valley mistletoe. It is the latter that is of commercial importance, because of its larger size and handsomer and more abundant berries.

The leaves of the mountain mistletoe are small, sometimes mere scales, and have little or no greenish tinge, being rather of a brown or yellowish hue. The berries are usually small and inferior, although some species produce handsome berries. The variety found solely on the oak is dark green in color and has fine berries, but it is comparatively rare and seldom used for decorative purposes. The yellow pine, juniper, and cedar, in fact, nearly all trees common to the mountains of southern Colorado, Arizona, and New Mexico, are victims of various species of the mountain mistletoe.

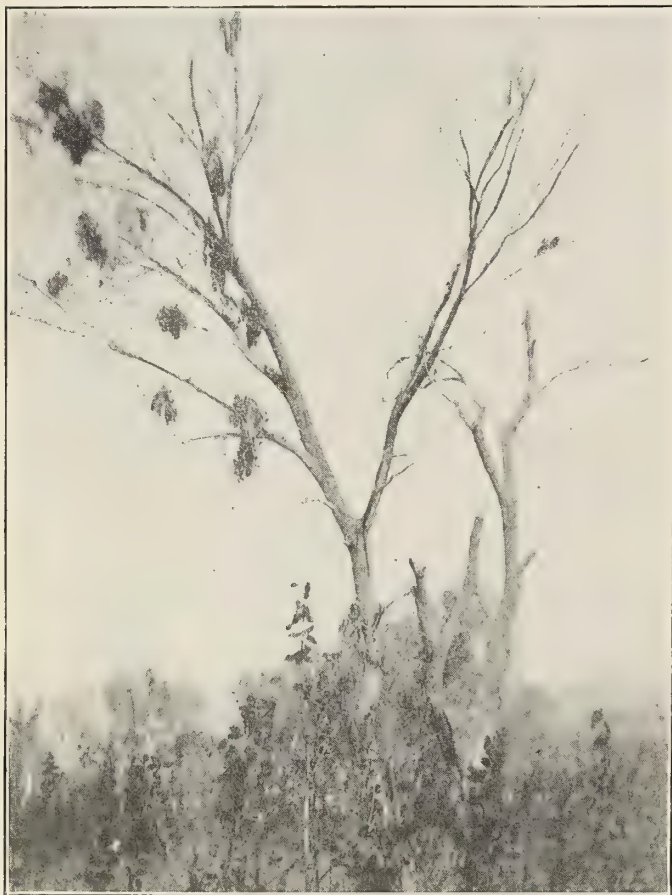
The valley variety is also known as the "soft-wood mis-



A BUNCH SHOWING THE EXCEPTIONALLY LARGE AND ABUNDANT BERRIES OF THE MESILLA VALLEY MISTLETOE

tletoe," because it attacks such trees as the ash, willow, poplar, sycamore, and to some extent even cultivated fruit-trees. It is the valley cottonwood, however, that suffers most from the ravages of the romantic parasite, and no tree is more beautiful or more valuable as a shade tree than this, its particular and long-suffering victim.

One of the largest of Southwestern trees, the cottonwood may truly be said to be man's best friend in the arid regions. Every ranch has its whispering groves offering welcome shade in the hot days of summer, and cottonwood saplings are usually the first signs of life to put in an appearance on reclaimed desert land. Along the river banks and the margins of dry stream beds the tree grows naturally, and valley roads and "acequias" or irrigating-ditches become, in a few years, tunnels of welcome green where the tree is planted. The full round tops and drooping branches are a delight to the eye until far into the winter with their golden-tinted autumn leaves, and this glorious foliage scarcely disappears before the delicate green of spring has taken its place. In some localities the new leaves appear as early as February, and by April the cottonwoods are resplendent in their summer dress.



MISTLETOE WHICH HAS KILLED ITS HOST AND SO COMMITTED SUICIDE

It is this fine tree that the mistletoe is doing its best to kill. Once let it get a start in a grove and it spreads like a plague. Birds and the wind serve as carriers from one tree to another, and soon a gaunt skeleton rears its head where before was a luxuriantly-leaved tree. So

densely are some of the cottonwoods loaded with the mistletoe that they appear to have as thick foliage in winter as in summer; a grove soon succumbs, of course, to such exhaustive attacks. Fortunately a tree thus doomed is a comparatively rare sight, most of them harboring



A HALF-DEAD TREE HEAVILY FESTOONED WITH MISTLETOE—"THE ROMANTIC PARASITE"

fewer of the parasites and thus able to withstand the pest for a longer time. Very old, large trees seem better able to defend themselves than the young or half-grown ones, and an old tree survives indefinitely with a load of the parasite that would kill a young one rapidly.

Occasionally the eye is greeted by the sight of a gaunt dead trunk upon whose blasted branches hang a remnant of dried and withered brown bunches—mistletoe which has committed suicide. Gone is the vivid, poisonous green which fed on the life-blood of the tree; gone the waxen-white, semi-transparent berries, so cherished at Yule-tide; dead at last by its own ruthless piracy is the "Killer," and only a cluster of crumbling leaves silhouetted against the crimson of the winter sunset, remains to tell the story.

"When it is realized that we are consuming our timber four times as rapidly as we are growing it, we must encourage the greatest possible co-operation between the Federal Government, the various States and the owners of forest lands, to the end that protection from fire shall be made more effective and replanting encouraged."

Warren G. Harding

The Regeneration of the Highlands

BY A. MACCALLUM SCOTT, M. P.

[In the *Edinburgh Scotsman*]

WE were a party of members of Parliament of widely different shades of political opinion, and we had set forth on a tour with a view to discover something of the possibilities of afforestation in the Highlands of Scotland. At Beauly, under the guidance of Lord Lovat himself, we saw what a far-sighted landowner, with a family tradition behind him, can do to make forestry on an extensive scale a source of profit to himself, and of prosperity and well-being to a large local population. At Fort Augustus, under the guidance of Mr. Sutherland, of the Forestry Commission for Scotland, we saw the beginnings of a planting scheme, which, when it is completed, will cover some 9,000 acres of poor grazing and waste land with a valuable crop of timber. And at Culbin Sands we saw the onward march of the devastating sand dunes being stayed by the agency of the forester.

I have no space in which to narrate our many interesting experiences during each of these visits, or to tell of the joys of motoring through some of the most beautiful scenery in Scotland. Nor can I speak as to the impressions formed by other members of the party. I can but give expression to some broad and general, but very definite ideas which were formed in my own mind.

DEEP-ROOTED PREJUDICE

Right at the beginning of our tour we ran full tilt against one of the most deeply rooted prejudices, which throughout the past generation have raised an almost insuperable bar against any attempt at public action to promote afforestation in the Highlands. "It is a great pity," said a veteran land reformer, who had led the crofters in many a fight, "that you are taking good arable land to plant with trees. The people want the land, and why should they be put off it just for trees that neither you nor I may live to see cut. To clear men off for sheep was bad enough, but for trees—that is worse."

"I agree with you," said the forester of our party, "that it would be a crime to plant good arable land with timber. We don't do that. If you can tell me of any case where we are accused of doing so I will go down with you at once and upset it."

"There is such and such a place," said the reformer, "not ten miles away, where they have planted some acres of good arable land just to prevent a crofter from getting his holding extended."

"But we have nothing to do with that place. We have planted no trees there."

"Perhaps it is the Laird himself who has done it."

"Perhaps it is. I know nothing about it, and in any case, if things are as you say, we would not approve of such action."

The land reformer returned to the charge—"There is

Ratagan, over at Glenelg in the West, where the Forestry Commission has bought up a large sheep farm. There is a lot of good arable land there, but I hear that it is all being planted. Even the shepherds are being driven out of their jobs. The people are very much upset about it."

"I am glad you mentioned Ratagan," said the forester, "for the very opposite is the case. It is quite true there is some good arable land there. It has all been set aside for small holders, and arrangements are being made to settle them there. On the side of the river which we are keeping there is some good land. It has been divided between the shepherds who were formerly employed on the farm. We will be able to give employment both to them and to the other small holders, which will make them much more prosperous than they could ever be on their holdings alone. Not a single acre will be planted which is worth more than 2s. or 3s. a year. Is not that a good thing to do?"

"Well, yes," said the reformer sceptically, "if it is as you say. But I have heard different!"

A FIXED IDEA

The highland land reformer of the past two generations has his eyes fixed on small holdings to the exclusion of everything else. He has room for no other idea than the direct creation of small holdings. He has a fixed idea that afforestation is merely a device of the enemy for shelving small holdings. It is heresy to suggest that afforestation may be the surest and quickest way to establish on the land a race of prosperous and contended small holders.

We motored up Glenmoor to Fort Augustus, and beyond as far as the head of Lochloch. In a few hours we passed from clan territory to clan territory, which in the old days had been almost as distinct as separate States. We passed through the territory of the Frasers, the Chisholms, the Grants, and the MacDonells, almost to the confines of Cameron of Lochiel. We passed monuments of savage conflicts in the old clan feuds, and of the gallant men who had gone forth from these same glens to leave their bones on the monstrous battlefields of Europe and Asia in our own day. Alas! the whole district has been sadly depopulated. Crofts and crofters have disappeared. A few scrubby trees, self-sown birch, hazel, and pine, rise from the waterside. The bare hillsides pasture thinly scattered sheep or deer.

"Look around you," said the forester, "on the derelict land of Scotland. There are not 500 acres of planted timber in the whole long stretch of the glen. There are at least 50,000 acres suitable for afforestation, and capable of yielding a larger profit from timber than they yield as poor grazing. They could produce £200 worth of timber per acre, or a total of £10,000,000 spread over from 35 to


[Continued on Page 56]



Tree Stories For Children

Paper Made From Trees

BY MARY ISABEL CURTIS





A LITTLE boy I know went with me up on the mountain side, one day last fall, to watch the lumbermen at work skidding logs into great piles as large as a small house. The little boy looked up at me.

"Oh, wouldn't it be fun," he said, "to set a match to it and have a great big bonfire?"

"Not at all," said I, "for that would mean so many hundred sheets of paper burned before they were even made."

He didn't understand and so I told him how all these logs were to be used in making paper.

Perhaps you've seen the round, gray, papery hornet's nests hanging from a tree branch, or up under the eaves of a house? Well, these nests are really paper. Hornets made the first paper from wood, and men learned from them how to use our trees for making paper. The hornets take mouthfuls of wood from unpainted fence-posts or dead limbs of trees. They chew them into little balls of pulp and spread each mouthful carefully on the edge of the nest they are building. We make paper in the same way by machinery. Thousands of spruce and other woods are cut down every year, piled into great heaps, and later dragged, or floated down a river, to a pulp mill. There they are chipped by machinery into little bits, put into a tremendous kettle, or cauldron, called a digester, and over them is poured a liquid made from a lime and sulphur solution. The wood chips cook in this kettle for hours until they are pulp, like the pulp the hornets have chewed for their nests. Then the pulp is poured into another vat where it is churned around in water to wash out the solution. From this vat it is drawn off and passed between great hot rollers that iron the pulp into large flat sheets. The sheets pass from one set of rollers to another, each set ironing them out a little thinner, until at last they come out real paper, ready to be printed on and delivered at your door as the morning newspaper.



The Girl Behind the Fire Line

By WILL C. BARNES

IT was the height of the fire season. The Inspector from Forest Service headquarters at Washington, after a hard night's ride over rough and circuitous roads, stepped out of a decrepit auto stage into a little mountain town in northern Arizona, a hundred miles back from the railroad and walled in by pine-covered mountains.

The Inspector ate a hearty meal of ham and eggs and black coffee at the Palace Hotel, a bleak frame building much in need of paint, and hastened around to the local office of the Forest Supervisor, from which the government's administration of the surrounding forests was directed. He found the Forest Supervisor, his eyes red and bloodshot from sixteen consecutive hours' duty on a fire line the day before, busily running through a sheaf of fire reports from his rangers. It was not yet eight o'clock, but the office employees were all at their places and hard at work.

"On their toes," said the Inspector, mentally.

He greeted the Supervisor cordially and the two discussed the fire situation for a few minutes. The Inspector was handed a package of mail marked "Urgent," and he stepped into the outer office to read his official documents.

"Hell-O, Baldy!" It was a feminine voice, pleasant, but somewhat flippant. The Inspector started. A flush of indignation spread over his face. He was sensitive about the few stray hairs carefully brushed across the white expanse of his head. Beside, he was inclined to be punctilious about maintaining a proper standard of official dignity. Across the room, his eyes fell upon a young slip of a girl who sat at a typewriter. On her head she wore the metal headpiece of a telephone operator, which was connected to a small switchboard at her side, and she was talking, not to the Inspector, but to some one farther back in the mountains.

"Side of bacon an' reg-u-lar tin rations for Baldy Lookout. I got chu, Lem * * * but * * * listen to Mary. Bacon once a day, d'hear? * * * Sure they're orders. Didn't yu hear me? No candy life, this. * * * G'wan, say it with flowers, boy. G'bye."

She turned to the typewriter and drove the keys as if her life depended upon speed.

The Inspector frowned and sheepishly sat down. He started to read his mail, but he was uncomfortably conscious of the girl across the room. Her feverish pounding of the typewriter was interrupted every few minutes by a call to "plug in," which she invariably did with a smile on her red lips and with the most engaging laugh as she talked to unseen callers back in the forest.



The Inspector finally abandoned his papers and watched the girl with an appraising and critical eye. He had been dropping into supervisors' offices throughout the West for more than ten years. He had studied the forest personnel, he thought, from every angle, but this girl was a new problem quite outside his sphere of experience or approval. Clearly he was displeased and he made a mental note to tell the Supervisor what he thought of his judgment in employing a girl of such flippant and frivolous demeanor.

She was young—certainly not over eighteen—and wore a georgette waist of brilliant hue, with a gaily striped and extremely short skirt, silken stockings of sheerest possible weave, and tiny, sharp-toed patent-leather slippers with three-inch heels. Her hair was bobbed and fluffed out, her eyebrows were plucked and arched in the most approved fashion, her cheeks needed no rouge, for nature had well attended to that matter, but her lips showed unmistakable signs of close intimacy with a lip-stick.

"H—m," was the mental comment of the Inspector, "a flapper if there ever was one! How on earth did she get into the Service?"

Under cover of studying the papers before him he watched her work. The clock on the office wall showed eight-thirty. Instantly she stopped

her typing, swung round to the switchboard and picked up a clip board on which was fastened a large printed form.

The phone was of the type now obsolete except in the back country. It required grinding by a small handle, and she ground it vigorously for a full minute—a long ring, the call that brings every lookout to the phone for orders or a report. Then into the mouthpiece she called: "Eight-thirty, boys; all ready? Here goes. Bear Peak? Right; Rose Mountain? Right; Twin Buttes? Right; Wild Cat? Right; Blue Ridge? Right; Cedar Mountain? Right; Baldy? Right; All on hand. Good-bye everybody."

The eight fire lookouts were thus found to be on duty at their several stations and the girl having duly checked them all off on the form, turned again to her machine.

Constantly was she interrupted by calls. B-u-zzzzzzz went the bell. "Yes, Mrs. Smith, good morning. *** Gone, has he? How long since? *** Over toward

Beaver Creek? *** All right, I'll tell Mr. Spear. How's the baby? *** Fine. G'bye."

Turning to the form on the clip she made a notation on it, meantime calling to the Supervisor in the adjoining room: "Mr. Spear, Mrs. Smith says Bob has just gone over toward Beaver Creek where he could see a little wisp of smoke rising in the timber back of the old saw set."

Back to her typing she went. Fully five minutes passed. Then she turned to the board and plugged in. "Yes, this is the office. *** Uhuh, this is Grace. *** Yes, go on. *** Three twenty-two? All right. Thanks. G'bye."

"Mr. Spear," she called again to the Supervisor, "Bear Peak reports smoke rising on three twenty-two. He thinks it's on Beaver Creek somewhere near the old saw set."

Instantly the Supervisor rose and went to a large

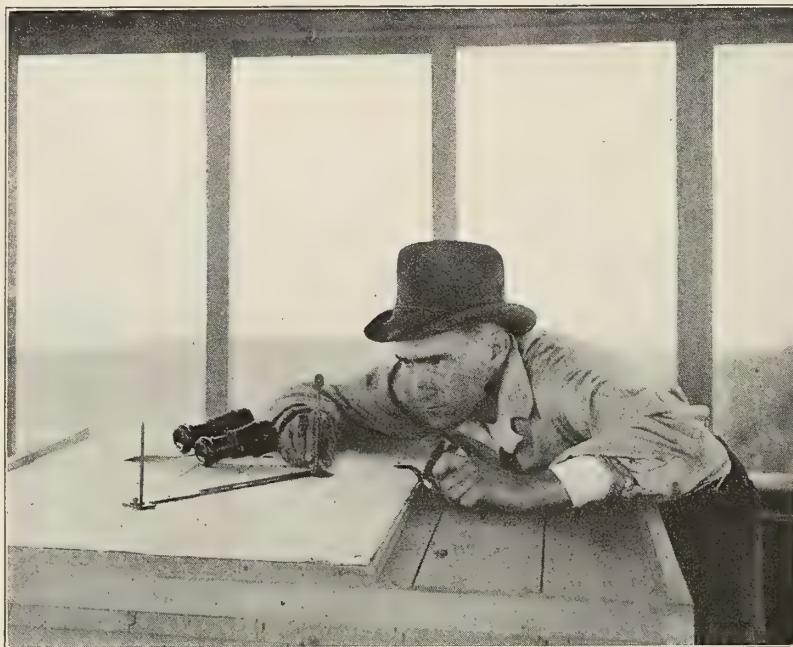
map hanging on the office wall. It was a map of his forest and on it at intervals were large red circles, perhaps three inches across, with the 360 degrees marked clearly on its outer rim, beginning with zero at due north.

Each circle was named and in the center hung a small white ring. Taking the ring in the center of the circle marked "Bear Peak," he pulled out the thread to which it was attached which went through the map and played out as he pulled, held taut by a small weight at the other end.

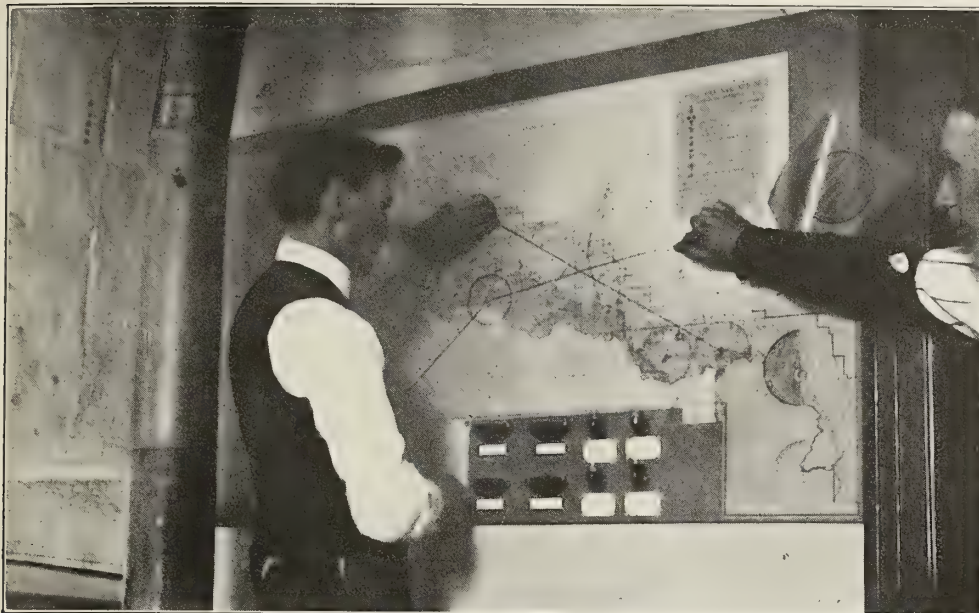
He swung the thread round the circle until it crossed the outer rim at exactly three twenty-two, then drew it out five or six inches. It crossed Beaver Creek about four inches from the rim of the circle. There he placed a long pin taken from a small tin box at the bottom of the map.

"That's the same fire Ranger Smith has gone to, I'll bet a nickel," he remarked to the girl. "Ought to hear from Twin Buttes, if it is."

A moment later the phone shrilled into the girl's ears. "Hello, Mary," she called cheerfully to the one female fire lookout in the whole district. "What's doing? *** Yep, go ahead *** aw-right *** bears sixty-one. *** On Beaver Creek, you think? *** Uhuh, Bear Peak just reported it at three twenty-two. Beat you to it. G'bye, lady." Each forest lookout is provided with a plane table on which is fixed a map of the forest properly "oriented" and similar to the one in the Supervisor's office, except that there are no small circles.



"A PLANE TABLE ON WHICH IS FIXED A MAP OF THE FOREST. ON THIS IS AN 'OVERLAY' OF CELLULOID ON WHICH IS MARKED A LARGE CIRCLE DIVIDED INTO 360 DEGREES. THE ALIDADE IS SIGHTED LIKE A RIFLE"



"THE SUPERVISOR INSTANTLY WENT TO THE LARGE MAP ON THE OFFICE WALL AND DREW OUT THE THREADS FROM THE CIRCLES UNTIL THEY CROSSED THE OUTER RIM. AT THEIR INTERSECTION WAS THE FIRE"

On this is an "overlay" of clear celluloid on which is marked a large circle, perhaps eighteen inches in diameter, divided on its perimeter into three hundred and sixty degrees or points. The center of this circle is exactly over the point on the map where his lookout station is located.

Over this sheet swings an "alidade" balanced on a fixture so it can be swung clear round the circle. At one end of this alidade is a perpendicular sight or range finder with a small "peep-hole" near the top. The opposite end has a slender rod about the size of a lead pencil, which tapers to a sharp point, on which is a small ball about the size of a pin-head. The whole thing is quite like the "peep-sight" on a long-range rifle.

By swinging this range finder around the circle, bringing it so that the tip of the rod is in an exact line with the peep-hole as it bears upon a distant object, the lookout can report its exact location.

If one lookout reports a fire as bearing due east, and another lookout located we will say fifty miles to the southeast of him reports a fire as bearing northwest from him, the point at which the threads on the Supervisor's map intersect one another when drawn out on the readings furnished by each lookout show the exact location of the fire which naturally must be the same fire, but seen from different directions. With this instrument the location of fires has been reduced to an exact science.

Before the girl's last words

had been spoken, the Supervisor had drawn out the black thread from the center of the circle marked Twin Buttes, swung the thread around to sixty-one, pulled that thread out with one hand and with the other the thread from the circle marked Bear Peak. At the exact point where the two threads crossed, he placed the pin he had used to mark the direction reported by Bear Peak.

"Pretty work," he smiled at the Inspector. "Two lookouts caught the same fire within five minutes of each other, but the Ranger saw it from his station before either lookout caught it."

The Inspector nodded approvingly. The Supervisor turned to the girl.

"Did you get a report from the Duck Creek fire yet?" She shook her frizzled head.

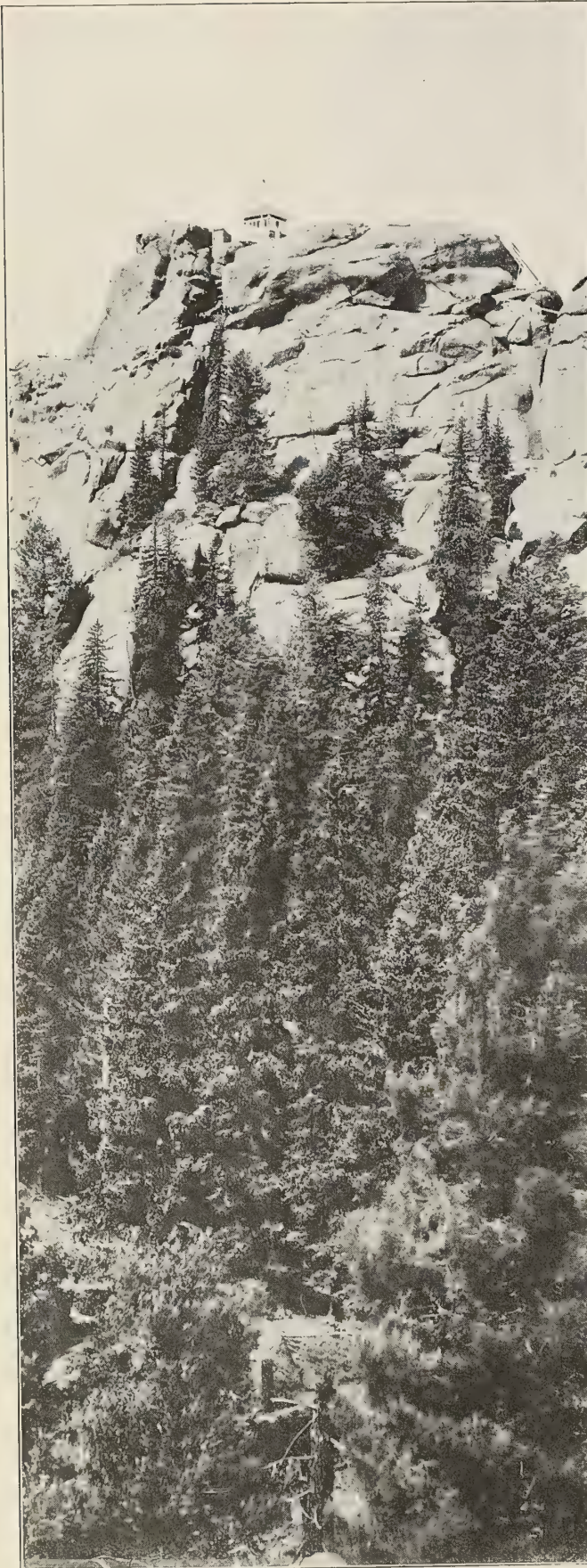
"I've tried three times, but haven't been able to get the Ranger. I'll try him again."

She turned to the board, plugged in and gave three short rings. A voice answered promptly. "How 'bout that Duck Creek fire?" she queried. "Got to have a report from you for the weekly fire report to the District office. * * * Half an hour? All rightee, kid, you know I'm bound to get that weekly report in today, so get busy—Goo'-bye." She gave that merry little laugh at something the voice said. "Don't get gay with Mother, sonny," she called back, "this is my busy day—'bye."

She slipped another plug into place. "Forest Super-



THE RESULT OF A SINGLE FIRE BEYOND CONTROL. IT IS TO PREVENT THE POSSIBILITY OF SUCH APPALLING WASTE THAT THE MEN OF THE SERVICE MUST STRAIN EVERY NERVE, AND IN THIS VITALLY IMPORTANT WORK SUCH ASSISTANTS AS "THE GIRL BEHIND THE FIRE LINE" ARE INVALUABLE



DEVIL'S HEAD FIRE LOOKOUT STATION ON THE PIKE NATIONAL FOREST IN COLORADO, THE HIGH POINT WHERE ONE OF THE FIRST OF UNCLE SAM'S "LADY LOOKOUTS" WAS STATIONED

visors' office," she said. "Oh, that you, Billy? * * * Quit your kiddin'. I'm fuller of biz than a hen with duck-lins'. Say, what was the total cost of that Wolf Creek fire? Gotta have it for the weekly fire report, what? * * * All rightee, shoot."

She copied on a slip of paper as she listened: "Seventy-six dollars, seventy-five cents," she repeated the item; then, "Off the line for a minute, Billy dear, there's Rose Peak lookout calling: Hello, Rose Peak. * * * Yep. * * * You got a smoke reading one hundred eighty? Aw-right; I got-cha; Steady there, one at a time, they'll last longer. Hell-O, Mary, you gotta smoke, too? Aw-right, let her come. * * * Three twenty-seven? O. K. George beat you to it by about seven seconds. G'bye, Mary; G'bye, George."

The Supervisor was at her side. She handed the slip to him with the figures each lookout had reported. He hurried to the map, drew out the two threads. "Hmm, that's a bad place for a fire." He turned to the girl. "Get me Apache ranger station." A quick movement of the plugs and she nodded toward the desk phone.

"Hello, Jim," he said, "Rose Peak reports a big smoke on one hundred and eighty and Blue Ridge one on three hundred and twenty-seven," he snapped into the instrument. "It's right in the middle of that big slashing on Elk Creek. There was an auto party camped there yesterday when I passed. Probably left their camp-fire burning. Go to it with all the men you can pick up at the sawmill. Keep us posted how things go, for we can't afford to let it get away from us in that neighborhood. Don't fail to find out what started it. The auto was camped under the big fir tree at the creek crossing. I noticed they had brand-new cord tires on both hind wheels. Won't be hard to trail 'em up. On your way. Good luck."

As he hung up, an auto stopped in front of the office. Out from it flew an excited woman who raced toward the door. "There's a fire burning along the road about five miles from here," she gasped.

"Which road?" the Supervisor demanded.

"The one coming down Deep Creek cañon," she replied.

"Can you give me an idea of its size?"

She hesitated. "Oh, as big—well, as big as the little park out there," rather exultingly at her method of measurement.

"I'll be there inside half an hour; many thanks for your thoughtfulness in telling us." The Supervisor turned to the girl. "Miss Smith, you'll have to run the office while I'm gone. I'll pick up three or four men and run them out in my own car. Don't fail to have that fire report ready to wire to the District Office."

Ten minutes later he boomed out of town in a cloud of dust toward the reported fire, his car carrying four men whom he picked up at the general store and a lot of

shovels, fire rakes, water bags, two or three spools of insulated wire, and a field phone set.

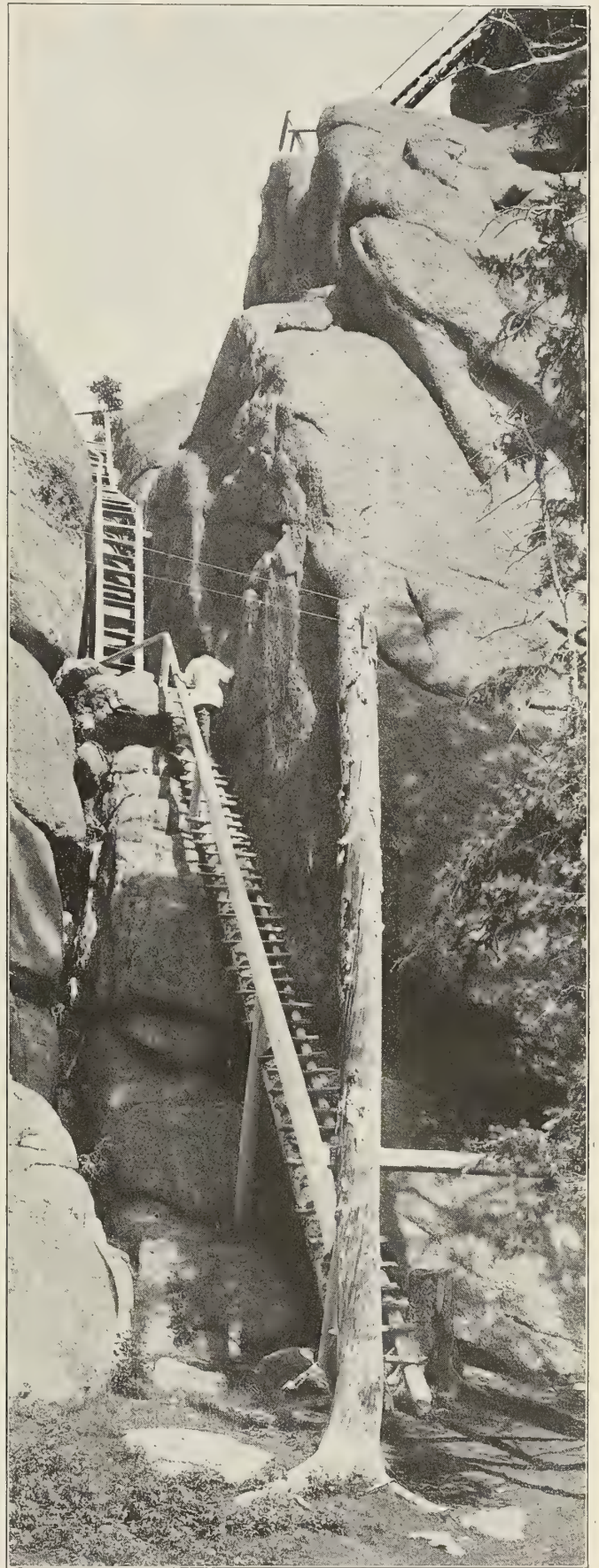
For fully ten minutes the girl rattled away at her machine without being disturbed by the phone. Then she turned and plugged in. The voice came from the Ranger in charge of a road-building crew working on a forest highway.

"Hello, George," she gurgled into the phone—if George could but have seen those saucy eyes—"what's your trouble, kid, this fine morning?" * * * "Short of grub, hey? * * * Gimme the list," she grabbed a pencil. "All rightee, let her come. Two hundred flour. Case tomatoes. * * * Uhuh, all water, gwan, case corn, twenty-five coffee, hundred sugar, case milk, two cases T. N. T., three pick handles, heaviest crowbar in town, * * * what became of the other one I sent out last week? * * * Fell over the cliff into the deep water, hey? Well, it's charged up against you on my property return, so you better go swimming and fish it up. G'wan—Three rolls fuse, two boxes caps number ten, six sets horse-shoes number two, heels and calks, three pounds horse-shoe nails, caddy matches, caddy each Bull Durham and Camels." * * * "Hey? * * * Yes, surest thing you know, they'll be loaded in one hour after the truck gets in. It's due about noon and it's eleven now. I'll get 'em right out of town with your stuff. Ought to reach you by dark. Oh, mamma, won't Joe say some naughty words when I tell him he's due to get out of town as soon as he can get gas and water and feed his homely face." Again that engaging laugh.

"Say, Georgie, did you know there was a dance set for next Saturday night here in town?" Her eyes were a study. "What—me? Sure I will," she spoke into the mouthpiece. "Got a new Montgomery Ward waist to wear that'll kill you dead when you see it. * * * All rightee, and thank you for the bid. So long, don't work too hard."

For five or ten minutes she kept the phone busy giving orders to the local merchants for the needed supplies for the road camp. "No," she said to an inquiry. "I can't come over and see the crowbar. No one here but me to run the whole works. George said he wanted a good heavy one—probably twelve pounds at least, I should say, and I know he wants the face to be not over three inches across and not drawn down too thin. And listen, George said don't send that — brand of tomatoes, for the last case was two-thirds water and the rest mush. Don't forget either that the horseshoes must have heel and toe calks. Get busy and get the stuff ready soon as you can. I'll send the truck after 'em not later than two o'clock. Get a move on you, G'bye."

An auto carrying a party of tourists stopped in front of the office. Out stepped a man. "Where did the road to Fort Apache turn off?—was there a good camping place about twenty miles out of town on the road to the mountains—how were the roads between Fort Apache



LADDERS LEADING TO THE DEVIL'S HEAD OBSERVATORY, AND THE "LADY LOOKOUT" ON THE FIRST LAP OF HER LONG CLIMB TO THE TOP. A POST REQUIRING PLUCK AND NERVE

and Globe—was there any trout fishing in the streams on the Apache Indian reservation and to whom do you apply for permits to fish and did it cost anything for a permit?" were some of the questions this human interrogation point fired pointblank at the girl and which she answered almost as rapidly and, as the Inspector knew, with excellent accuracy and good judgment. With a map of the forest in his hands and profuse thanks for the information, he left the office.

Again the phone disturbed her work. It was from the Supervisor who, finding the fire more than he could well handle, had cut in with his field-phone set to get help. The girl listened intently. "All rightee," she said crisply. "I'm on the job this minute. I'll see that they're Johnny on the spot. Nothin' more? I'm gone, G'bye."

A quick shifting of plugs, a violent winding of the crank, then; "Hello, that you Mr. Smith? Good. Now lissen—the Super is out at Deep Creek near the old "C C" ranch. He took four men, but says he's afraid they can't handle it—big wind blowing and there's a regular jungle of young pines there which he doesn't want to take a chance on losing. Dig up four or five men, will you, and send them out in a truck or car just as soon as you can. Come on over here to our storeroom when the car's ready and I'll give you some fire tools, bedding and a lot of cooking tools and emergency rations *** yes; fifty cents an hour from the time they leave till they get back. Your agreement with us covers the hire of the car, you know. Make it snappy now for the Super wouldn't squall for help unless he sure enough wanted it. Goo-bye."

Exactly twenty minutes later a car carrying four men and a driver shot up before the adobe store-house in the rear of the office. The girl was there almost as the brakes stopped their shrieking.

"Here you are, boys," as she unlocked the door of the store room, a list of the things they were to take in her hand. Rapidly she ran over the list and as rapidly were the articles placed in the truck—fire rakes, shovels, axes, water bags, a ten-men cooking and eating outfit complete in every detail, even to a cook's apron, already packed in a box for just such emergencies; another box with four days' rations for ten men, all nicely packed in a box, ten camp beds each rolled in a shelter tent and securely tied with a stout rope. As these went into the car she checked them on her list, item by item, snapped the lock to the door and with a wave of her hand toward the distant mountains, called out a cheery, "On your way, boys, don't mind the speed laws," as the car, muffler wide open, tore out of the yard in a cloud of dust.

Back in the office that everlasting, never-ceasing phone bell was splitting the air with its racket. She hooked the headpiece over her fluffy locks. "Hello—hell—O," she snapped into it. It was the Ranger in charge of a crew of men building a new phone line. She listened with a keen look in her eyes.

"Can't finish the last five miles with the money allotted to you? What's the matter with your estimates. ***

Made a mistake did you? Say, lissen to sister's words; the Forester doesn't pay you to make mistakes and money is mighty scarce around this office, I'll tell the world. *** Oh, of course; uhuh, that's what you fellows all say. *** How much you want anyhow? Not that I'm inclined to give it to you even if we had it, but just to see how far you did miss it in your figuring? *** Fifty? Sure that'll do? All rightee, wait a minute till I look over my allotment sheets."

For a few minutes she pored over a sheet of allotment cards on which were the various projects for which funds had been allotted for that particular forest. She added and subtracted; studied and pondered, made red ink notations on one card, rubbed out figures on others, took from this card and added to that, transferred funds from this card to that for the phone job. Then she turned to the instrument.

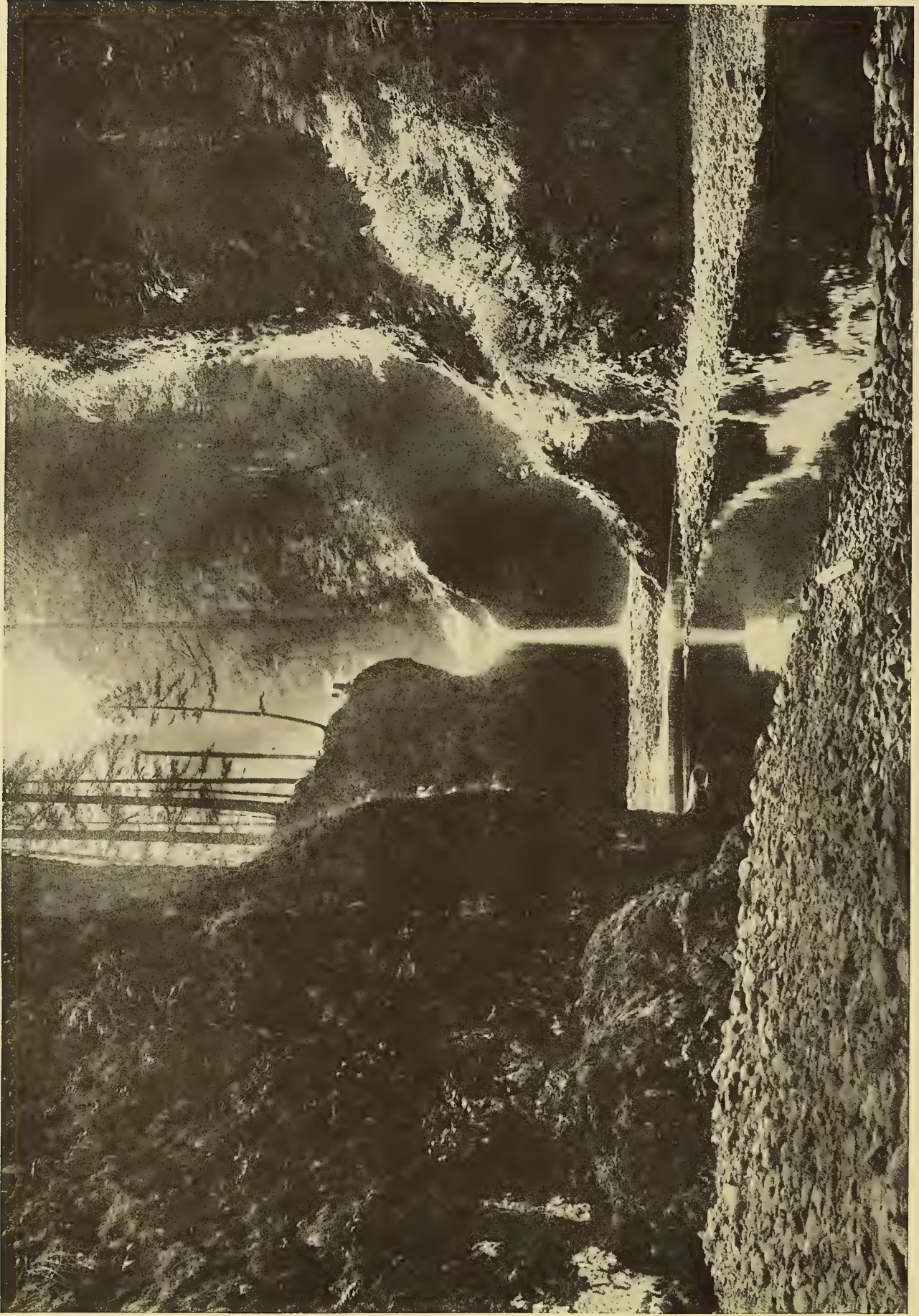
"Hello, Mac; Yep, I've dug up ten dollars from one fund, twenty from another and enough in fives to make up that fifty for you. Mind you, though, you'll get not another nickel, so make it last out or your name will be mud. Sabby?" A girlish smile spread over her bright face as she listened. "Oh, boy," she gurgled; "a whole box of candy next time you come to town. Well, don't be too long getting here. I'm short on candy. G'bye."

It was twelve-thirty noon. Off came the headpiece and the dainty fluffy ruffle apron she wore. At the basin in the corner of the room she washed her hands and with the aid of the little mirror in her vanity case stroked down the thin line of her manicured eyebrows, used the lip-stick with a free hand, fluffed up her bobbed hair, and dextrously went over her face and neck with her powder puff, paying especial attention to the pert little nose. On her head she crammed a most alluring felt hat, gave it the requisite pull-down on both sides and cocked it up in front. As she stopped for a moment in the doorway, a colorful silhouette against the bright outside light, she stood first on one foot and then on the other and polished her dainty pumps on her shapely silk-clad calves, then tripped off to lunch.

The Inspector from the Washington office had watched her every movement as she prepared herself for public view.

An odd look passed across his face. "You never can tell," he said to himself, "you never can tell. There are flappers and real women. Once in a while there's a flapper who is also a real woman. Maybe there's a whole lot of them. You never can tell. But—if all our men put into action the spirit of the Service the way that little combination of foolishness and good common sense does, what a Service we would have! She deserves a boost in salary and I'm blest if I don't look up her record and see what I can do for her."

Correction does much, but encouragement does more. Encouragement after censure is as the sun after a shower.—Goethe.



"Punch Bowl Falls"—Beautifully Situated on the Eagle Creek Trail, in the Oregon National Forest, Oregon



"The Ghosts"—Weird Rock Formations, Wheeler National Monument in the Rio Grande National Forest, Colorado



EDITORIAL



ADVANCING FORESTRY IN AMERICA

ATTEMPTS at formal expression of a forest policy for the United States have for several years aroused much discussion. Unfortunately this discussion has given undue prominence to differences of opinion. These, in the minds of many, have tended to block rather than to promote real progress. Meanwhile we are using each year four times as much timber as we grow. While Rome burns, not one Nero but several schools of Neros fiddle industriously, each insisting that the only way to arrive at harmony is for all the others to read from his score.

It is hardly to be expected that at this time all can agree upon every detail of a comprehensive national program of forestry and thus obtain at once full concord in advance on each and every successive step. A more rational plan would suggest an agreement upon the ultimate goal to which forestry in America should be advanced. Each step, each feature of legislation, each educational appeal, each intermediate objective, represents only a point of detail. Upon each of these there may or may not be universal agreement. Indeed, it is reasonable to expect that there will be minor differences of opinion at every step; but among a democratic people, accustomed to the principles and power of majority rule, such minority objections should not prove a serious obstacle to steady progress.

It should not be necessary at this time to elaborate our nation's forest policy beyond a mere formula such as the following: We should so regulate the use of our forests and our non-agricultural forest lands as to insure to our people, so far as possible and at the lowest practicable cost, a permanent supply of wood in location, quantity, and quality suitable to their growing needs. Certainly there is nothing in the foregoing to which every forester in America cannot heartily subscribe. Absolute agreement as to ultimate aims should not only be easy but should be

also conducive to agreement on many intermediate objectives.

Fortunately for the cause of forestry in America today, the Secretary of Agriculture is not only interested in the problem but actively urges affirmative action which would advance it far toward the common goal of our mutual desires.

In his annual report for 1922 Secretary Wallace deals with the forest problem of the nation in a forceful and constructive way. Most helpful of all are his suggestions on forest legislation. In clearest terms he indicates the following five things as proper subjects for remedial Federal action, three of which are referred to in his article on "Forestry and Our Land Problem" which appears elsewhere in this issue. First in importance, he urges the extension of our co-operative five protective system until it covers adequately our 450 million odd acres of privately owned forests; second, more complete co-operation with the States in growing and distributing forest-planting material; third, rapid extension of the purchase of forest lands under the Weeks law; fourth, inclusion within the National Forests of all lands in the unpreserved public domain better suited to timber growth than any other purpose; and, fifth, adequate provision for research in the growing and utilization of timber.

The foregoing appears to be absolutely sound as far as it goes and it also forms a program sufficient to require, until accomplished, all the energy of the profession and of others who realize the need for action. Is it not possible for the foresters of the country to get back of a movement to secure favorable action on the foregoing five propositions? Can we not all agree that they merely constitute five objectives, important but not all-comprehensive, in advancing forestry in America toward an agreed goal? If so, why not adopt the foregoing five objectives as constituting this year's forestry program?

ON WITH THE WEEKS LAW PROGRAM

AS a monument to the Weeks Law, signed by President Taft on March 1, 1911, there are today almost two million acres of National Forests in the eastern mountains of the United States. These areas are distributed from Maine to Georgia and form the nucleus of what must eventually be a much larger area of National Forests if our growing demands for timber, forest recreation, and water-shed protection are to be met.

During the first five years following the passage of the act, approximately \$2,000,000.00 were appropriated an-

nually to carry out the original plan of forest land acquisition. This plan contemplated the ultimate acquirement of six million acres on the water-sheds of important eastern rivers—one million acres in the White Mountains and five million acres in the Southern Appalachians—but the continuity of its execution was seriously interrupted first in 1919 when the appropriation was reduced more than one-half, and again last year, we believe unwisely, on the theory of needed economy, to \$450,000.00.

Again this year the Bureau of the Budget proposes to

hold down expenditures under the Weeks Law to a reduced and inadequate basis, although the opportunity for acquiring the forest land desired at low prices was never better. In his recent report the Forester points out that, with the field organization which effective work necessitates, and in view of the size of some of the forest holdings now offered at attractive prices, \$2,000,000.00 a year is the least that can be expended with complete efficiency. Its expenditure should add to the National Forests in the East four hundred thousand acres of land every year, and the Forester is authority for the statement that the expansion of eastern National Forests should not progress at a lesser rate.

Although the Weeks Law was passed eleven years ago and at that time contemplated the acquisition of six million acres as the least that be purchased within a period of ten years, that original program today is only one-third completed. In the meantime the area of privately owned forest land in the United States subject to denudation, fire damage, and erosion—the very conditions the Weeks Law was meant to remedy—has expanded enormously. This is appallingly evident by a comparison of the area brought under public control and protection during that period by all public agencies exclusive of the public domain reservations, with the total acreage cut over,

burned or damaged by erosion. The former acreage aggregates ten million acres, the latter approximately seventy million acres. In other words our present progress is only one-seventh of what it should be in order to keep pace with current forest devastation.

AMERICAN FORESTRY believes that it is mistaken economy to curtail expenses for a project of such vital national importance as that represented by the Weeks Law. That law has indeed become a corner-stone of American forest progress which President Harding himself in a message to Congress on December 8 declared to be of vital national importance. Aside from the benefits derived from the creation of eastern forests and protection of eastern waters, fish, game, and forest recreation, the law has been instrumental in stimulating co-operative efforts on the part of twenty-eight States to provide better protection against forest fires and to acquire under State ownership wild forest lands best suited to forest and related interests.

Hearings on the item in Congress will probably be held this month. The appropriation must be increased. It should be restored to its original figure of \$2,000,000 annually. It is our duty as good American citizens to let our Congressmen know how we stand with respect to legislation of such vital importance.

FORESTRY IN NEW ENGLAND

DURING the last week in December several important meetings were held in Boston, which served to focus public interest on forestry in New England. During that week, the Society of American Foresters and the New England Section of the Society held their annual meetings; a New England Forestry Congress took advantage of the twenty-fifth birthday of the Massachusetts Forestry Association to celebrate the progress so far made and to plan for still further achievement in the future; and last, but not least, the Section on Social and Economic Sciences of the American Association for the Advancement of Science, under the leadership of Colonel Henry S. Graves, held a symposium on conservation, in which forestry played an important part.

Most of us probably do not appreciate how vital a place the forests of New England occupy in its agricultural and industrial development. Three-fourths of the State of Maine and two-fifths of Connecticut are today classed as forest land.

After three centuries of development New England as a whole still has a forest area of 27,807,000 acres as compared with a farm area of 16,990,000 acres, or 6 per cent more forest than farm land. The area of forest land is more than four and one-half times the area of improved farm land. Maine today cuts more eastern white pine lumber every year than any other State except Minnesota. Massachusetts produces nearly twice as much pine as does the State of Michigan.

New England's problem is to see that its forest lands, by being kept continuously productive, are made to play the part which they can and should play in the economic life of the region. Past failure to practice forestry is to a large extent responsible for the abandonment of farms and the disappearance of wood-using industries, which in turn have led to the decline of so many rural communities. If its forest lands were today producing to the full extent of their capacity, New England would be more independent, more prosperous, and better developed, both agriculturally and industrially, than is now the case; and incidentally it would not be paying a freight bill of millions of dollars every year for the importation of yellow pine from the South and of Douglas fir from the far West.

Real forestry progress, however, is being made in New England. Many associations, corporations, and individuals are alive to the situation and are active in their efforts to remedy it. Special mention should perhaps be made of the Massachusetts Forestry Association and the Society for the Protection of New Hampshire Forests. Each of the New England States now has a State Forestry Department, which has the cordial support of both timber-land owners and the general public. But increased appropriations, and in some cases additional legislation, are essential to enable these departments to function more effectively.

GUARDING OUR WATER-POWER RESOURCES

FOR years the National capitol has been the stage for a bitter legislative fight over the water-power resources of the country. The battle to save them for the people was begun by Theodore Roosevelt and though death overtook him before the fight was won, let it be said to his honor that there is on our Federal statutes today a water-power act, passed in 1920, which safeguards public rights in the ownership of one of our greatest natural resources.

But that the principles of the law are still threatened is evidenced by the recent formation of a national committee of very eminent men to stand in defence of the act. Among the members of the committee are James R. Garfield of Cleveland, Walter L. Fisher of Chicago, and John Barton Payne of Chicago, former Secretaries of the Interior; Henry L. Stimson of New York, Lindley M. Garrison of New York, and Newton D. Baker of Cleveland, former Secretaries of War; David F. Houston of New York and Edwin T. Meredith of Des Moines, former Secretaries of Agriculture; Governors Henry J. Allen of Kansas, Joseph M. Dixon of Montana, and John M. Parker of Louisiana; Gifford Pinchot, Governor-elect of Pennsylvania; Henry S. Graves, head of the Yale Forest School, until recently Chief of the U. S. Forest Service; Herbert Knox Smith of Connecticut, former Commissioner of Corporations; William Kent of California, former Congressman, and other prominent conservationists.

The water-power act of 1920, the committee points out, embodies the principles of conservation and thereby protects the public interest in securing full development without having to pay monopoly profits. It does this by requiring:

(1) That every water-power lease shall be limited to a maximum of 50 years.

(2) That the lessee shall pay the Government a small rental for the power privilege when he builds his own dam and other works, and a larger and fair rental when he uses works constructed by the Government.

(3) That the lessee must submit to regulation by State authority, or if there is no State authority by the Federal Power Commission, of the services he renders and the price he charges for light and power.

(4) That any excess profits over a fair liberal return on the actual investment shall be made over to the public in the form of a reduced price for the lessee's works at the end of his 50-year term.

(5) That States and cities have first call on power sites.

"It is significant," declares the Secretary of the committee, "that the foes of the Federal Water Power Act do not appear to include the large group of interests which are the main investors in and developers of water-power. These formerly antagonistic interests now, as a rule, admit that the act is practicable and are willing to develop water-power under its provisions."

But public attention and watchfulness, the committee points out, has been diverted from its water-power properties by problems of war and reconstruction. "The public is forgetting or has forgotten—must, in fact, be informed all over again on this question—so that the act may crystallize, by practical operation for some years, into a settled and unquestioned policy. For this leadership is needed, and this will be the committee's first task."

Only a small part of the enormous water-power resources of the country has been developed. Some eighty-five per cent of the developed power remains under the control of the Federal Government, of which thirty-one per cent are on sites in the National Forest. Our water-powers stand as one of our greatest and most valuable natural resources, and the long fight once won, there must be no back step—no relinquishment of watchfulness. The personnel of the committee alone should inspire confidence and support of the public service which it has voluntarily undertaken.

FOREST TAXATION IN MINNESOTA

A BETTER appreciation of the real economic situation surrounding the vast areas of idle cut-over forest lands to be found throughout the Lake States, as elsewhere, is bringing many to a realization that, if most of these lands are to be productively used in the immediate future, it will be for a forest crop, otherwise no crop at all. That economic conditions rather than taxation and the like control, and will always control the utility value of these lands, must be conceded. Nevertheless, it should be entirely obvious that inadequate fire protection, unfair taxation, and similar adverse conditions are negative influences in the path of economic progress in forest utility.

It is gratifying to note that interest in improving the methods of taxing forest property is clearly manifest in

Minnesota. The people of that State will do well to support those business men who have been far-sighted enough to see the necessity for doing something and are going ahead. The Rotary Clubs of northern Minnesota, under the leadership of the Duluth and Cloquet Clubs, are backing the movement to rationalize the tax system so that those who want may utilize their lands for forest production on as nearly equal tax terms as possible with productive efforts in other lines.

The plan they are backing provides for establishing a commercial forest tax district under control of the State Tax Commission and comprising such forested or other unimproved land therein as is suited to growing forests

[Continued on Page 52]

Interesting Paragraphs from the Chief Forester's Report

On December 19th the annual report of Col. W. B. Greeley, Chief Forester of the United States, was released, and the following paragraphs are selected from its many interesting and informative statements.

The accessible timber of the world is inadequate to the requirements of modern civilization. We now draw one-third of our paper from Canada. The northeastern paper mills have already been seriously handicapped by the embargo against the export of pulpwood cut on crown lands, which form a large part of the Canadian forests. There is likelihood that this embargo will be extended to all forest lands in the Dominion, completely shutting off raw wood from Canada as a source of supply for the paper industry of the United States. This illustrates the hazard of becoming dependent upon foreign supplies of timber.

* * *

Apparently what the people of Alaska want is not the power to run the Government's business or property in Alaska but power to run their own business. They do not object to the two National Forests in Alaska being administered just as National Forests are administered elsewhere, but they want to make their own laws, levy their taxes, and spend their own public money just as do the people in the States. In short, what Alaska wants is not that the Union should be ousted from the Territory, but that Alaska should be admitted to the Union.

* * *

Motors and good roads have combined to effect a radical change in the outdoor recreation habits of the American people. Vacation time is now a period of free movement, nomadic enjoyment of widely separated scenes, and of simple living in the open. Rich in scenic beauty and natural charm and offering the primitive attractions of the wilderness, the National Forests afford an incomparable field for the indulgence of this wholesome tendency toward rational play and physical improvement. Within their limits travelers by motors, by wagon, on horseback, or on foot, campers, hunters, and fishermen, amateur photographers, mountaineers, berry pickers, naturalists, and everybody else who wishes to come have equal opportunity. Care with fire and cleanliness in camp are the only requirements imposed upon their sojourn. The wide distribution and extent of the National Forests and their proximity to thousands of cities and communities make them natural centers of summer recreation, particularly for the masses of people whose vacation must be inexpensive. Between 5,000,000 and 7,000,000 people visit the forests each year.

If it is folly to grow timber merely to be burnt, it is equal folly to grow it to be wasted by ignorance or indifference. Nowhere in American life is waste more conspicuous than in our forests and forest products. In all the stages of manufacture—the woods, the sawmill, the wood-using factories, the building trades, wherever wood is used—there is waste, appalling in its aggregate. American business has begun to see the vital importance of better methods of manufacturing and using wood; it recognizes that wood saved is equivalent to wood grown; it perceives that high prices and growing scarcity must soon make economy imperative; and it desires to be shown how waste may be curtailed.

* * *

Every year makes the forest problem of the United States more clear. Its main features are:

1. The rising cost of timber products due primarily to heavier transportation charges from more and more distant sources of supply.
2. The unproductive condition of immense areas of land which are not adapted to agriculture.

* * *

During the last six years the Forest Service has made an attempt to secure nation-wide information on the forest-fire situation. These data indicate that the number of forest fires averaged 33,500 annually. The area of forest land burned was 7,088,000 acres annually, and the immediate property loss was \$16,424,000. The number of fires in 1921 was 38,400, which is more than the average, but the area of forest land burned in that year, 4,737,000 acres, was considerably under the average for the 6-year period, though the year was very dry and the fire hazard extreme in some portions of the country. It is significant that in the southeastern group of States—North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi, of which only North Carolina is organized for forest-fire protection—the area of forest land burned in 1921 was 58 per cent of the total in the United States, and the damage to timber was 49 per cent of the total damage in the country.

* * *

Forest Service investigators have recently completed a unique and exhaustive compilation of the forest resources of the world. Not the least startling of its revelations is that so far as our great structural and all-purpose woods—the softwoods—are concerned, we must become self-sufficient or go without. There is an immense reservoir of

hardwoods in the Tropics, hardwoods which can be used for limited and special purposes and secured at mahogany prices. But the struggle for the world's supply of softwoods will become more and more intense, and those nations will fare best that prudently use their suitable waste lands for growing coniferous woods. This study rudely shatters the dream of those who rely on importing the timber we need when our own is gone.

* * *

The outstanding feature of the Weeks law work during the year was the formal establishment of the Allegheny purchase unit, embracing 440,000 acres on the upper headwaters of the North Fork of the Allegheny River in Pennsylvania. This unit constitutes the basis of what eventually will be another Eastern National Forest. Its establishment extends Federal activity in protecting the watersheds of the Ohio River drainage, and is a forward step in the promotion of reforestation and the consequent perpetuation of forest industries in northwestern Pennsylvania.

The new forest is situated at a point where problems both of watershed protection and of forest perpetuation reach a climax. Not far to the south lies Pittsburgh, whose serious flood losses have necessitated unprecedented flood-control measures, involving most elaborate and expensive engineering plans; and below Pittsburgh are other great cities whose losses of life and property due to floods have been sources of national concern. There is scarcely another region in the United States where the perpetuation of timber supplies is more important; for in a radius of 100 miles there are thousands of wood-using plants, representing investments of millions of dollars.

* * *

As a first step in determining the requirements of wild life on the National Forests, an effort has been made to secure reliable data on the number and species of game animals. Estimates so far submitted on the more important big-game species indicate that the National Forests contain nearly half a million deer of several species, reported as existing on eighty-six forests. Elk formerly

occurred in nearly every State, but the larger number are now confined to National Forests and National Parks in fourteen States. Of a total of 72,000 elk reported in existence in the United States several years ago, a majority find range on the National Forests some time during the year. The once large herds of antelope found in all Western States have been almost annihilated, but the 2,400 head now existing on the National Forests in ten States constitute the nucleus of future herds. A total of 13,000 mountain sheep in eleven States, and 10,000 mountain goats in four States are reported. A few representatives of many other big game species are still found in widely scattered sections of the National Forests, while fur-bearing animals under protection show a remarkable increase in most localities.

* * *

The National Forests comprise nearly 157,000,000 acres of land in the most rugged and isolated parts of twenty-six States. The forest ranger manages an average unit of 155,000 acres, and the forest supervisor an average unit of 1,060,000 acres. The type of country in which these men work varies from the flat pineries of Florida to the roughest and most inaccessible mountain ranges of Idaho or the rugged coast of southern Alaska. The nature of their duties varies from putting out fires and building trails in vast, unbroken, and undeveloped stretches of virgin forest to serving the multifarious needs of urban and industrial centers on National Forests adjacent to them. The clientele of the National Forests is as varied as their resources and topography. In some ranger districts the principal concern is the selling and cutting of timber where the demand exceeds the supply and the rate and methods of cutting must be closely controlled. In others present users are chiefly stockmen and the immediate problems are the allotment and efficient use of pasturage. On still other districts the demands of the recreation-seeking public necessarily claim a large share of the forest officers' time and thought. The nine hundred-odd ranger districts in the National Forests present almost every conceivable variation in the nature of the resources and the kinds of public needs.

Announcement of the Annual Meeting

The Annual Meeting of the American Forestry Association will be held in New York City on January 17th, at the Hotel Commodore. Arrangements have just been completed to make this gathering the occasion of a joint meeting of the American Forestry Association and the New York State Forestry Association. The principal event of the day will be a luncheon at noon, at which a number of men prominent in forestry and other outdoor movements will speak. Members are cordially invited to come and bring their friends. It will be appreciated if those who plan to attend this luncheon will notify Mr. O. M. Porter, at 18 East 42nd Street, New York City, before January 16. Reservations are now being made at \$2.00 a plate.

Indian Peeling in Western Yellow Pine

By WALTER J. PERRY

A VERY common query of tourists and others on their first trip into the Southwestern forests is, "who peeled all those big pine trees, and for what reason?" They refer to the yellow pines commonly found around the edges of open parks and mountain valleys, which have had from half to three-fourths of their bark removed up to seven or eight feet from the ground.



MUTE EVIDENCE OF AN OLD INDIAN CUSTOM

A thrifty 22-inch pine, about one hundred and fifty years old, when it was "peeled" three-fourths of the way round some seventy years ago.

This is the explanation: On the Carson National Forest in northern New Mexico there was, within the memory of living men, quite a large Indian population, consisting of Navajos and occasional roving bands of Utes, Apaches, and Comanches. These were gradually dispossessed and pushed back by the Mexican settlers coming in from the south up the valley of the Rio Grande, so that the last remnants of the original inhabitants disappeared to the arid west about forty or fifty years ago. Formerly these people, or some of them, cultivated patches along the lower valleys of the various mountain streams and made their winter homes there. In the summer they spread out into all the little mountain valleys, and signs of these camps are very abundant. One of these signs is the peeled trees referred to.

From the best information obtainable from old settlers, Indians and others, it appears that the Indians removed the dry outer bark of the trees by means of stone hatchets, after which the inner bark or cambium could easily be stripped off. This was dried and roughly ground by means of the *metate* and used as a substitute breadstuff to eke out the scanty supply of corn raised in the valleys, which, to judge by corn-cobs found in the once-inhabited caves, was of very poor size. The peeling of the bark was done in the early summer when the sap was flowing freely and the bark was easily removed. At this season the cambium is tender and quite palatable, being of sweetish taste and slightly aromatic, and is probably nutritious.

The accompanying photograph is of one of some 30 or 40 peeled trees around one old summer camp ground. The tree shown was a thrifty 22-inch pine, about 150 years old when it was peeled three-fourths way round in 1852—70 years ago. Since then it has continued thrifty and now measures 38 inches, while new wood has overgrown and covered the old wound for a distance of 8 inches on each side of the face.

Losing its bark half or three-fourths way round in this manner does not appear to injure the trees seriously, as resin is promptly exuded, which effectually protects the wound against the entry of wood-rotting fungi, and the peeled wood rapidly fills with pitch, rendering it probably stronger than it was originally.

It is notable that the Indians practiced forest conservation, for while they had the whole forest to work on they very seldom, if ever, entirely girdled a tree but always left sufficient bark to keep it alive. Accordingly, for the Indians' purposes, no injury was done the tree as it continued to live, grow, and bear seed, but the paleface sawmill operator of today frequently makes the Indian the subject of very uncomplimentary remarks when he finds one side of a nice clear butt log, from which should come his highest-grade lumber, "cat faced" as a result of the peeling, while the remaining lumber in the lower half of the log is liable to run to lower grades on account of the pitch accumulation.

New Year's Resolution for Every Member

Resolved:

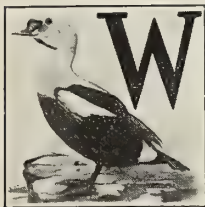
That in 1923 I pledge myself to secure at least one new member, to the end that our membership may be doubled, our influence extended, our power for good increased, and the importance of the work the Association is doing be more deeply impressed upon the minds of the great American public.

Wildfowl Lore

By R. W. SHUFELDT, C. M. Z. S., ETC.

Fellow of the American Ornithologists' Union

(Photographs and Drawings by the Author, with Figures by Fuertes and Audubon.)



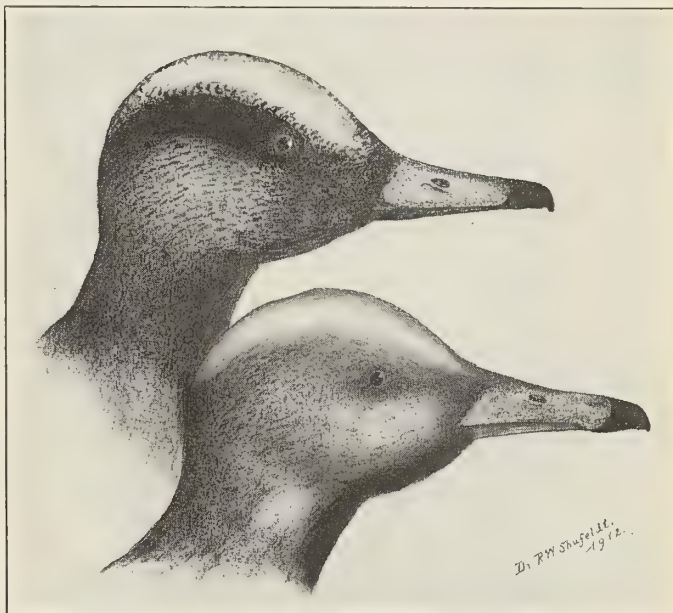
WRITERS on birds include under the term "wildfowl" all the various ducks, geese, and swans of the world's bird fauna. Representatives of this group, totaling more than two hundred recognized species, inhabit all parts of the globe. But all do not agree—at least sportsmen do not—that the mergansers are entitled to a place among true game or those wildfowl legitimately considered among the ducks and geese. The published literature on this group is wonderfully extensive, including, as it does, an endless amount in books and journals devoted to sport and dating back almost to the days when printing first came into vogue.

The anatomical structure of many of these birds is both curious and interesting and has claimed the labor of many minds and pens. Finally, a very great deal has been published on the natural history and classification of the group, including their geographic distribution, together with the extinction of certain species.

This article, however, will be confined principally to the description of a few of our wild ducks that are not as well known as such forms as the wild Mallard, the Canvas-back, the Red-head, Buffle-head, and a few others, all of which are generally exposed for sale in our markets during the hunting season. So, too, with the figures, the majority of which are of ducks with which the general

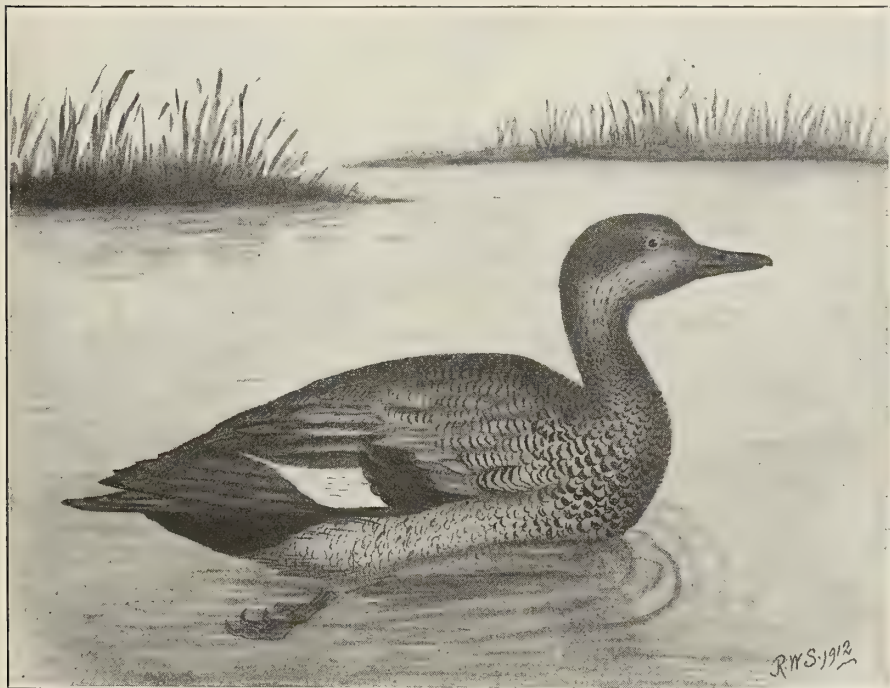
reader is not as familiar as with the various species just mentioned.

For many years I have hunted our wild ducks in differ-



RELATED DUCKS FROM TWO SIDES
OF THE ATLANTIC

FIG. 2—Heads of Widgeons; the upper one is of the Baldpate or American Widgeon, and the lower one of the European Widgeon. Both are first-class game birds and, as wildfowl, are much hunted by our gunners. They are saddled with some nine vernacular names.



A WIDELY KNOWN WILD DUCK

FIG. 1—A male Gadwall, reproduced from a water-color painting by the author. This is a great favorite with sportsmen, and is frequently seen in our markets. It is known under many vernacular names.

ent parts of our country; so I have shot Red-head, Canvas-back, all three species of Scaups, Ring-necked Duck, Goldeneye and Buffle-head, Old Squaw, Scoters, Ruddy Duck, Black Duck, Mallard, Gadwall, Widgeon, all three species of Teal, Shoveler, and Wood Duck. I have never collected any of the lovely Eider Ducks because I have not been in the countries they inhabit.

Mallard shooting does not appeal to every one, for the reason that the bird is simply the counterpart of the common barn-yard duck. In fact, it was from this species that we originally obtained the domesticated bird. It has more than a dozen vernacular names, used by gunners over various parts of its range, as wild Mallard occur nearly all over North America.

The Mallard builds on the ground, making a nest of any loose stuff that may be handy, and carelessly finishes it off with feathers. Coues, who gives us

the size of the eggs of this duck but not the number, says that they are "smooth, yellowish-drab, or some similar dingy color." Wilson tells us that "the nest is usually placed in the most solitary recesses of the marsh, or bog, amidst coarse grass, reeds, and rushes, and generally contains from twelve to sixteen eggs, of a dull greenish white." This is the correct account of the nest of a Mallard, of its nesting-site and the clutch of eggs, in so far as my observations go.

The species known throughout the States as the Black

cies of our wild ducks, special reference being here made to the Teals, the Wood Duck, the Dusky, and the Mallard. The etymology of the name Gadwall is not known. As early as 1667 it was Gaddel, and later Gadwale, Gadwell, Gadwal, and finally as it is now spelled, Gadwall.

One of our most beautiful wild American ducks is the Baldpate or Widgeon (Figure 2), which, in its plumage and general appearance, is more or less unlike the European Widgeon; the latter has been taken on various occasions along the Atlantic and Pacific coasts of the United States



AMONG OUR SMALLER RIVER DUCKS NONE ARE GREATER FAVORITES THAN THE TEALS

FIG. 3—There are three species of our Teals shown here: the one with the crescent in front of the eye is the male of the Blue-winged Teal, the female being shown on front view in the center. The dark-colored bird upon the log is a male Cinnamon Teal, a beautiful Western species, while below on the water, looking up, is the male of the Green-winged Teal, the female of which is on the log in front of the Cinnamon Teal. Occasionally the European Green-winged Teal visits our Atlantic Coast, but not often.

Mallard or Black Duck is really the Dusky Duck of popular ornithology, and one of the best fowls we have for the table. In the old days they were very abundant on Long Island Sound, but not now. There are two subspecies of this form described, namely, the Florida Duck and the Mottled Duck of Texas.

The Gadwall, represented in Figure 1, is one of those ducks having a range extending over many parts of the world, though it is largely a western form in this country. Years ago it was very abundant on the western lakes and a favorite game bird, being known by many common names, as Gray Duck, Speckle-belly, Gray Widgeon, Bleating Widgeon, Creek Duck.

The Gadwall is readily domesticated, as are many spe-

from 1886 to 1899. Our Widgeon is, as in the case of so many other wild ducks, saddled with some nine or ten names, bestowed upon it by gunners and others, some of them being not only unpleasing, but quite ridiculous, such as Smoking Duck, Wheat Duck, and so on.

American Widgeon winter down through Mexico and Latin America, and probably also migrate to some of the islands of the West Indies; while during their migrations through Wyoming in the autumn months of 1878 and 1879, I shot them on the sloughs of the Laramie River. Wilson states that this duck sometimes alights in trees; but I have never seen an instance of this, though several species of our ducks have that habit; and, as is well known, our two species of tree duck breed in the hollows



SEVEN SPECIES OF WELL-KNOWN AMERICAN DUCKS

FIG. 4—One of our most beautiful Sea Ducks—the Harlequin (male). FIG. 5—Male of the American Widgeon or Baldpate, a favorite game bird. FIG. 6—Pintails range throughout North America and are one of the most beautiful birds of the entire group. FIG. 7—Few of our Sea Ducks are known by as many names as the little black and white “Buffle-head”—the one here shown being a male. FIG. 8—Cinnamon Teal, male, is an abundant species in the West and in South America. FIG. 9—A male Long-tail Duck in winter plumage. FIG. 10—A duck somewhat resembling a Mallard—the male of the Shoveler—is so named for the manner of feeding with its big bill. In the circle is a male American Eider Duck and a pair of Harlequins, male and female, adapted from one of the attractive and accurate plates by Fuertes. The other figures in the plate are from photographs by the author, secured through the courtesy of the United States National Museum.

of trees, high up from the ground and often a long distance from water. When the young are hatched, the old birds take them, one by one, in their bills, and carry them to the water. Our Wood Duck does the same thing, as most of our ornithologists have noticed and described.

Most writers on North American birds, including the compilers of the official Check-List, place tree ducks among the geese, which is an error, although some of their characters point to the fact that they possess considerable affinity with them. It would seem not to be very scientific to call birds "ducks," and at the same time list them with the geese. In years gone by, these tree ducks were very abundant on the Rio Grande, and they may be more or less so still. They range southward through Mexico into South America, and are much prized for the table everywhere. One of them is known as the Fulvous Tree Duck, and apparently by no other vernacular name—in this country at least. Upon the other hand, the other species is not only called the Black-bellied Tree Duck, but also the Autumnal Tree Duck and other names.

Taking into consideration all of the various species of ducks that we have, there is no more interesting group among them than the forms which have long been known by the name of Teals. These are also represented in the Old World bird fauna, and the one listed as the European Teal has, upon a few occasions, been taken in this country as a "straggler." Aside from this we have three species of American Teal, namely, the Green-winged Teal, the Blue-winged Teal, and the Cinnamon Teal. The European Teal just mentioned more or less resembles our Green-winged Teal, so many have designated our bird as the American Green-winged Teal. Others know it simply as the Green-wing, as both it and the European species have the "speculum" of the wing a rich green. This speculum, as it appears on the wing of a duck, is here well seen in Figure 8, where it is pure white. Quite a number of wild as well as domesticated ducks possess this color ornament

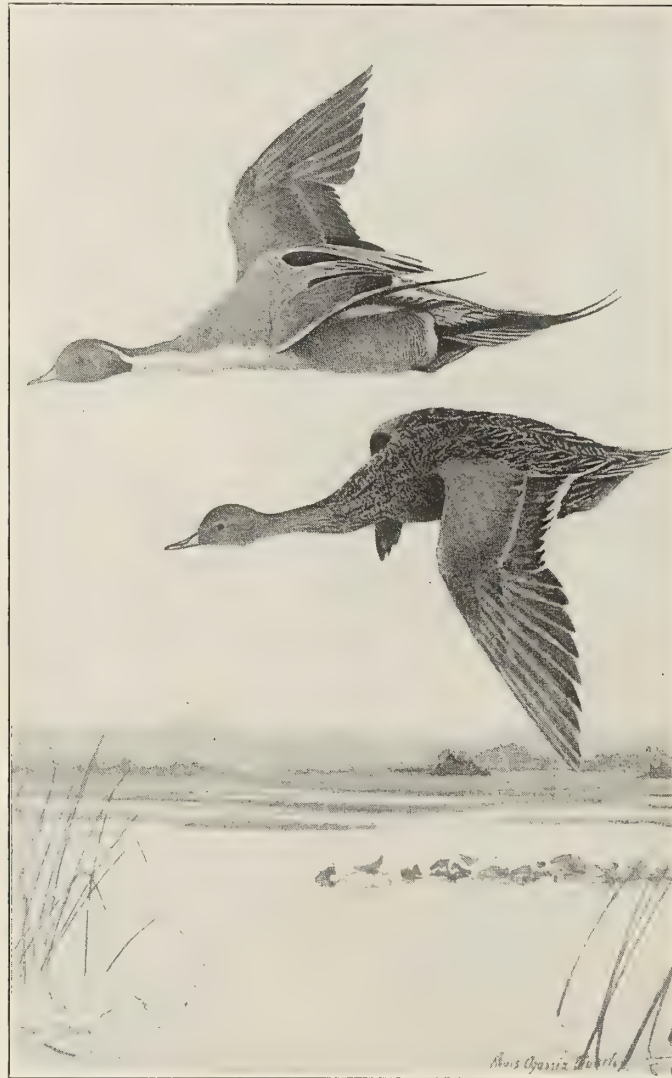
on the wing, and it is generally of a brilliant green color.

Teals are small birds with interesting habits and rich plumage, while certain foreign species of them, such as the Chinese Teal or Mandarin Duck, possess a wonderful plumage in the matter of color as well as in unusual feather-structure. They have been domesticated to some extent in the United States, and beautiful living specimens may be seen in the "fowl-pool" of the National Zoölogical Park. The head of our Green-winged Teal is of a rich chestnut color, passing to black on the chin. Behind each eye there is a very glossy green area, passing to black on the neck behind; hence this bird has also been called the "Red-headed Teal." The flanks and upper parts are whitish, marked with fine, transverse, wavy lines of black, while below, the plumage is white and spotted with black. Green-winged Teals are found, or may be found, in any part of the United States, while in winter they migrate as far south as Central America.

Our Blue-winged Teal is a somewhat larger species as compared with the Green-winged one, and the plumage is quite different. It is also known by such names as the White-faced Teal and Summer Teal, and it may be readily recognized by the pure white, black-edged crescent in front of either eye. As to its habitat, a writer says that it occurs in "North America, chiefly east of the Rocky Mountains; scarce on the Pacific Coast; winters South and to West

Indies and northern South America; in summer north to high latitudes, but also breeds indefinitely in its United States range."

On a beautiful day late in autumn, I was about to enter the "Milk-Ranch" canyon, not far from Fort Wingate, New Mexico. The sides are of great height and nearly perpendicular in most places. Suddenly there flew out of it, and directly toward me, a flock of some eight or ten small ducks. Three of them flashed a brilliant chestnut in the sun, and the sound caused by their wings made a



A PAIR OF PINTAILS

FIG. 11—This beautiful plate, copied by the author from a colored one by Fuertes, gives in the most effective way the differences in plumages of the sexes of this species and the manner of their flight.

perfect roar, being reflected, as a sort of echo, from the walls of the canyon. Being accustomed to the sound, it did not in the least disconcert me, or prevent me from taking a crack at that little bunch of ducks as they shot by. Three of them stumbled stone dead to the shot, and one of these was a male Cinnamon Teal of great beauty. This was 'way back in the early eighties; and I have not seen a live Cinnamon Teal since, though I have, from time to time, seen Green-wings. Indeed, last winter I flushed a fine male of that species on Piney Branch, which runs into the "Zoo," not over fifteen hundred yards from my home.

The adult female of the Cinnamon Teal closely resembles the adult female of the Blue-winged species—indeed, it is not easy to tell them apart, even when we have specimens of both in our hands. This is rather remarkable, in view of the fact that the male birds are so utterly unlike in the matter of plumage.

In our official list of ducks, we meet with the name of Ruddy Sheldrake; but this is an Old World bird, catalogued as North American only through courtesy, as a specimen was at one time collected in Greenland—and perhaps elsewhere since.

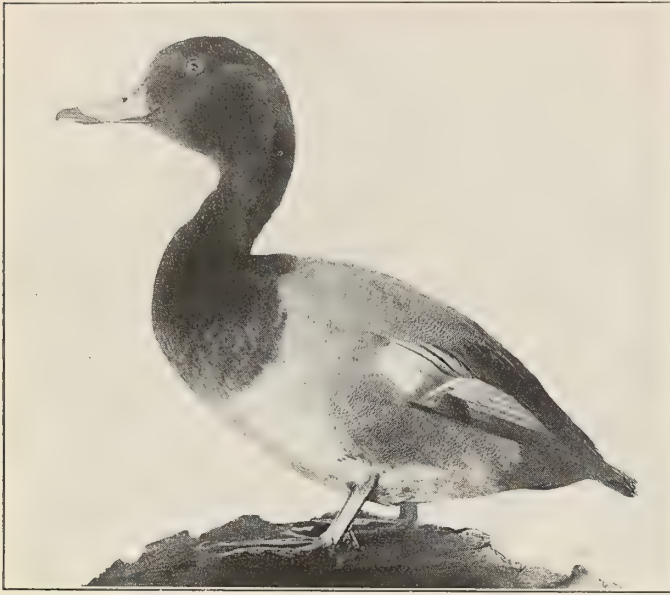
In the Shoveler (Figure 10) we have a wonderfully fine duck—not only for hunting, but for the table. The male has a glossy green head like a drake Mallard, and its bill is large, long, and broad. Its breast and lower neck is pure white, while the abdomen is of a rich chestnut shade, glossed with purplish. The shoulders are sky blue and the speculum an elegant green; the under tail-coverts, together with the rump, black. In the female the colors are much duller; moreover, the head and neck are pale brownish and speckled. As the male Shoveler only assumes full plumage during the brief breeding season (at other times having the plumage of the female), it so happens that it is rarely taken in full nuptial dress. I have personally shot many of these "broad-bills," but I do not remember having bagged a full-plumaged male. They are rare on the Atlantic Coast; far more abundant westward, especially on the rivers west of the Mississippi. In the old days thousands of them flocked on the streams of Wyoming and southern Montana.

In Figure 6 is shown one of our handsomest ducks—a male Pintail, which species is found in suitable localities throughout North America. Upwards of twenty vernacular names have been bestowed upon the two sexes of



THE MAGNIFICENT PLUMAGE OF THE MALE OF THE WOOD DUCK

FIG. 12—This duck is most frequently seen on the streams running through the timbered districts, and it nests in the hollow trunks of trees.



OUR FAMOUS RED-HEAD

FIG. 13—Red-heads are frequently sold in our market for Canvas-backs, and when the birds are taken on the same feeding-grounds, it is not an easy matter to distinguish the difference in flavor. While it resembles it in plumage, it is a smaller bird than the Canvas-back.

this elegant bird; but I have never heard them called anything but Pintails. In the male the head and upper neck is of a rich brown, beautifully glossed with dark purple, and this shades to green in certain lights. On either side of the neck, as will be seen in the figure, there is a white stripe, carried down to join the white of the breast below. Fine wavy lines cover the gray back crosswise. Upper and lower tail-coverts black. Only the male has the middle, elongate feathers of the tail, and its length greatly varies in different individuals, sometimes attaining a length of at least nine inches. In females and young the plumage is entirely different and very much plainer. In nature, the Pintail in full breeding plumage is one of the most "dressy" ducks that can well be imagined, and of the trimmest and most "clipper-like" build when seen on the water.

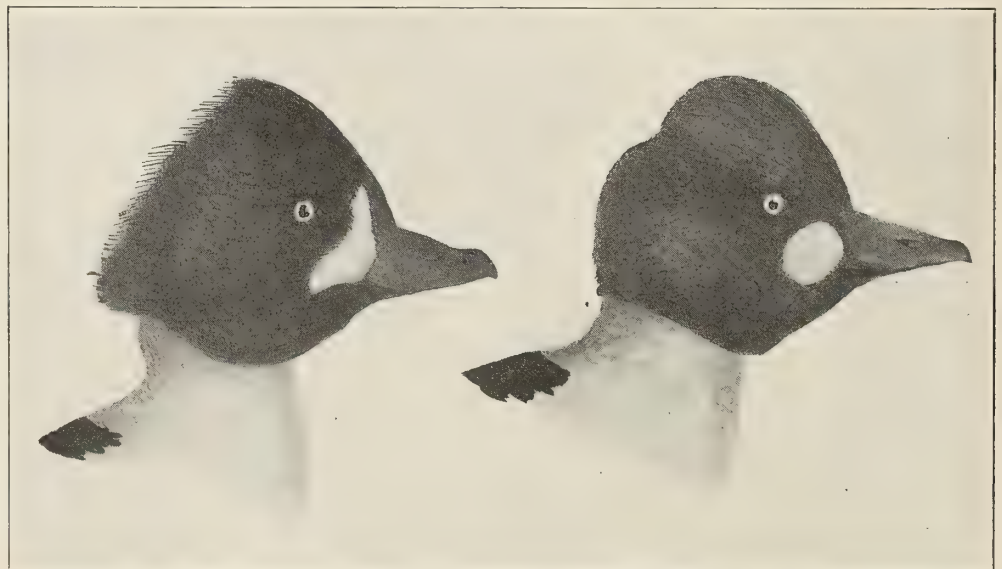
On the sloughs along the Laramie River I have found Pintails associated with Mallards, together with all three species of Teal, Widgeon, Canvas-backs, and other species. They have not a few interesting habits, such as swimming deep, going ashore to hunt for food, and, to quote Audubon, "it is by no means an inexperienced fly-catcher."

There are few handsomer ducks than our well-known Wood Duck—that is, the male of that species when in full plumage (Figure 12). Coues

stated in his "Key" that the Wood or Summer Duck "in confinement or semi-domestication, as the bird is often kept for its beauty, hybridizes freely with various other species, some of a different subfamily. The pernicious spring shooting of the bird on its breeding grounds has made it rare in many places where it was once common." After this authority published that statement, the Wood Duck came within an ace of being utterly exterminated simply to obtain a few special feathers from the sides of the male bird wherewith to make a particular trout-fly for fishermen! Those feathers sold for a very high figure *per ounce*, until the wildfowl protectors took a hand and saved the species. Now, I believe, Wood Ducks are slightly on the increase once more.

Passing to the "Sea Ducks," we have in our bird fauna over twenty different kinds of them, the Pied or Labrador Duck being extinct and the Rufous-crested Duck being a very rare straggler. There is quite an extensive literature on the extinct Pied Duck; and in the days of Audubon and Wilson the bird was more or less abundant on our Atlantic Coast; but neither of these writers even suspected that the species was on the road to utter extinction. Wilson said of it that "this is rather a scarce species on our coasts, and is never met with on fresh-water lakes or rivers." Audubon describes what he took to be the nest of the "Pied Duck"; mentions Daniel Webster as having shot them; describes many he had seen, but left not a word to indicate that he thought they were nearing extermination. Coues gives the date of the extinction of this bird as 1875—"the last known of the species"; and yet he both figures and describes it in the last edition of his "Key to North American Birds" (Vol. ii, 1884, pp. 934, 935). Even as late as 1910 the compilers of the Check-List of North American Birds retained the species among the "Sea Ducks."

The late John Lewis Childs paid \$1,000 for a male



HEADS OF BARROW'S AND THE AMERICAN GOLDEN-EYES

FIG. 14—These figures well show the slight differences sometimes existing between Eastern and Western species of our ducks. It is only well marked in the males of the two species here shown. Copied by the author from cuts given as by Fuertes.

specimen of the Pied Duck to put in his private museum, and he took great pride in showing it to me. He exhibited it under a specially made glass bell in a prominent place. In 1884 two hundred dollars were offered in England for a good pair; and such a pair would now command more than five times that amount.

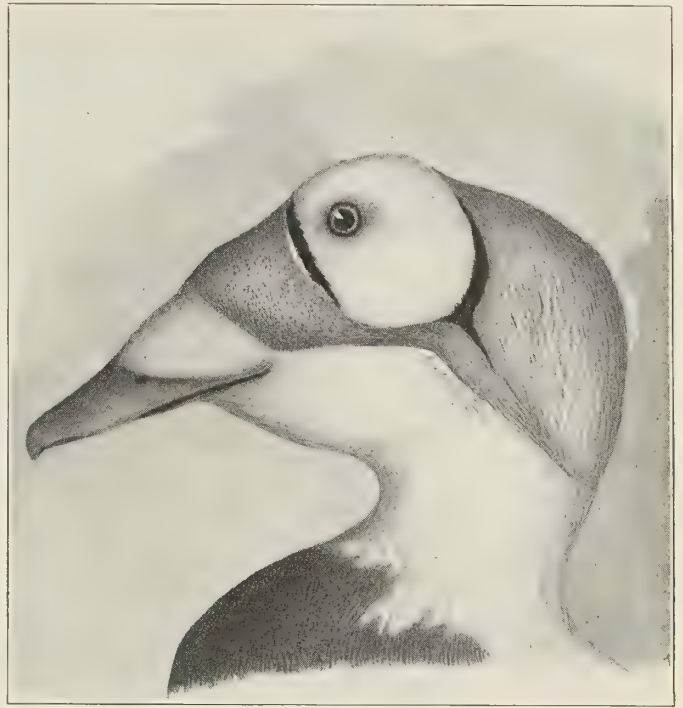
So much has been published about Canvas-backs and Red-heads—both birds being so famous for the table—that they are merely mentioned here in order to fill out the list and not omit their names. In Figure 13 is presented a particularly fine male of the Red-head, which any duck-hunter in this country can recognize at long range. The Canvas-back is not figured here, but I may have something to say about it later on.

Doctor Stejneger essayed to make a subspecies of the American Scaup Duck, while the late Dr. Elliott Coues pointed out that the bird is "absolutely identical with the European" form.

In the A. O. U. Check-List we find them recognized as the Scaup Duck (*M. marila*) and the Lesser Scaup Duck (*M. affinis*), and both placed in the same genus with the Red-head and Canvas-back.

Three very distinct black and white ducks constitute the genera *Glaugula* and *Charitonetta*, the first containing the American Golden-eye, which has some dozen other common names; Barrow's Golden-eye or Rocky Mountain Garrot, and the second our favorite little Buffle-head, which likewise is called, here and there, by all sorts of stupid names. The female of this species is widely known as the Little Brown Duck, and has the general appearance of being a different species (Figure 7).

The males of the Golden-eye are readily distinguished when in full plumage by the form of the white area between either eye and the bill, it being more or less round



THE SPECTACLED EIDER

FIG. 15—This is one of the handsomest of the group. It is practically confined to Alaska and islands, but is not especially abundant anywhere. Drawn by the author from a specimen in the National Museum.

in the American Golden-eye and triangular in Barrow's. The heads—that is, the black part of the plumage—of all of these ducks (the males) are beautifully glossed with iridescent colors, green being the prevailing tint in the American Golden-eye and purple and violet in Barrow's.

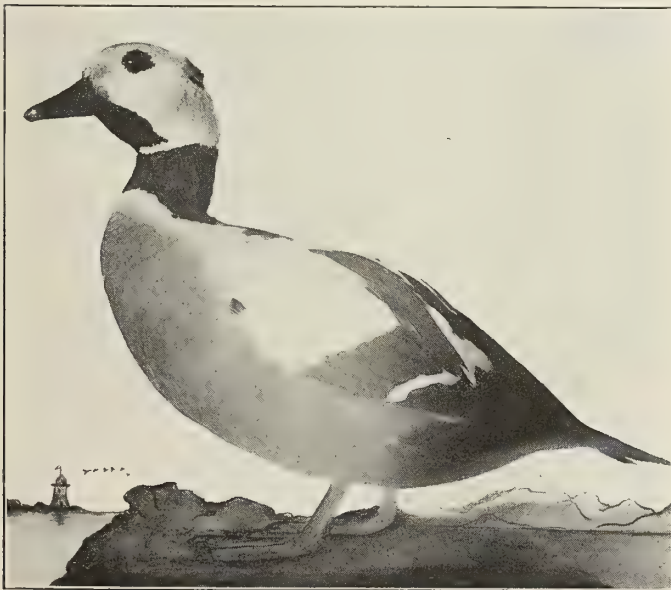
Our American Garrot closely resembles the European form of the species, being merely a trifle bigger. Both are birds of medium size, with, as I say, a black and white plumage, apart from that of the head. Many years ago, when exploring the mysteries of Lake De Smet, in Wyoming, I saw hundreds of many species of ducks associated with Curlew, Avocets, Snipe, Sandhill Cranes, and other water fowl. It was along the shores of that lonely sheet of water that I collected my first specimen of Barrow's Golden-eye.

The nest of a Golden-eye was discovered by Audubon only upon one occasion; but "not being then aware of the necessity of measuring or keeping eggs, I roasted them on some embers, and finding them truly delicious, soon satisfied my hunger. While I was eating them, the bird returned, but no male was to be seen."

This species makes such a noise with its wings when in rapid flight that many gunners call it the "whistler." Often, when shooting on misty days, I have heard the Golden-eyes passing and not seen them at all, the peculiar whistling of their wings being unmistakable.

In the female the head is snuff brown, and there are no white markings in front of the eyes. She is also smaller than the male, and has other good distinguishing characters.

Golden-eyes are handsome ducks; but, as favorites, they cannot compare with our little Buffle-head (*Charitonetta*



ANOTHER HANDSOME EIDER DUCK

FIG. 16—Known as Steller's Eider; it inhabits the circumpolar regions of the Northern Hemisphere. In high northern latitudes it flocks with the other species of Eider Ducks in enormous numbers. It is a very beautiful bird.

albeola, Figure 7), also called by some dozen other names. It, too, is a wonderful diver, being almost the equal of any of our smartest grebes. It ranges over North America at large, and has been collected in the Old World. Buffleheads stand among the handsomest of our small ducks; and, though small, they are often shot for the market.

Although burdened with over twenty vernacular names, our Long-tailed Duck, or Old Squaw, still holds its own in our duck fauna. A picture of one is shown in Figure 9. Off Long Island Sound, shortly after the Civil War, this was one of the

most abundant species found in the winter time. I have seen acres of them packed close together and riding on the waves like a great brown and white blanket. They have a peculiar tender way of calling "South-southerly, south-southerly, south-southerly, south-southerly." Now they are rare—and no wonder; for I have seen the "duckers" come up from New York on their ducking sloops, armed with swivel guns, loaded each time with a cupful of double-B's, with

which, at each shot, they often killed and wounded simply dozens of those beautiful birds. After getting two or three barrells, they would sail away, to unload at Fulton Market.

One of the world's most wonderful ducks is the Harlequin (Figure 4 and also in circle), which is a Northern bird, occurring in this country, chiefly coastwise, but also in the interior, where it breeds. It is rarely found south of New England on the Atlantic Coast nor at a corresponding latitude on the Western one. The male is a beautiful bird, with a very remarkable plumage for a duck, the female being plain in comparison and considerably smaller.

It requires several seasons for a male Harlequin to attain the full beauty of its plumage; then it has con-

spicuous white markings on the sides of the head and around the neck and chest. The general color is a plumbeous blue, tinged with purplish, and this becomes darker on top of the head than on the body. The median plumage on top of the head is emarginated with chestnut, and it has, upon either wing, a rich, metallic speculum, shading to violet. This bird is also widely known as the Lord (Lady for the female) and the Painted Duck.

Ten white eggs are laid to the clutch, and the ducklings are prettily speckled. The Harlequin is much sought

after for the table wherever found in any numbers. It is a fine swimmer and diver and a bird of powerful flight. Its note, a sort of whistle, is easily recognized by those familiar with it. Our Harlequin is a very shy bird and very vigilant; so few are shot by the gunners. It is frequently seen well out to sea; and, to some extent, it may be considered a marine species.

We have no fewer than six species of Eider ducks in our United States avifauna, and each and all of them



POOL FOR WILD FOWL IN THE ZOOLOGICAL GARDENS AT WASHINGTON

FIG. 17—Most of the birds seen in this picture are wild geese of several species. There are, however, a number of different kinds of wild ducks in sight. Photograph by the author.

are magnificent examples of the marine bird world. Several of them are figured in the present article, as the King Eider (initial cut, and Fig. 10); Steller's Eider (Fig. 16); Eider in circle on plate; Spectacled Eider (Fig. 15). These are sufficient to illustrate the general appearance and characters of the different genera. The Pacific Eider (*S. v. Nigra*) has, as its scientific name intends to indicate, a black V on its throat; but in other respects it closely resembles the Northern and the American Eider. These are the birds from which the famous eider-down is obtained.

There is a very striking difference in the plumages of the males and the females of this assemblage of birds, the latter being, as a rule, brown, transversely barred with

[Continued on Page 60]

The Pennsylvania Alpine Club

By LEWIS EDWIN THEISS

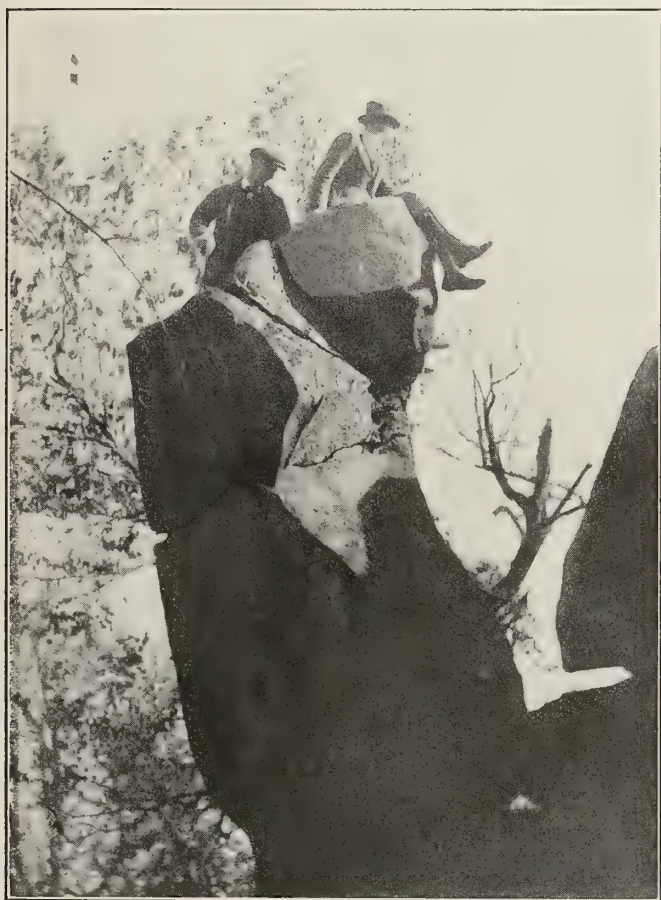
IN writing about the Pennsylvania Alpine Club, it seems particularly appropriate to remark that great oaks from little acorns grow. Being itself but the tiniest sort of an acorn at birth, the Pennsylvania Alpine Club is already in the way of becoming a mighty oak, indeed. While the woodland oaks it was conceived to foster, are fast growing into majestic reaches of forest, akin to that original and indescribably magnificent stand of timber that shall be known through all time as Penn's Woods, or Penn-sylvania.

Nowhere in the world has there ever been, probably, a more glorious growth of forest than the 28,000,000

Penn's matchless timber stands from these hopelessly stricken areas!

With our need of lumber a hundred times greater than it was in the days of William Penn, and our stand of timber in Pennsylvania well-nigh a hundred per cent less than it was then, it is high time that something were done to end this destruction of the forest. The demand for lumber in Pennsylvania—in her great mining industry that alone calls for 500,000,000 feet per annum, and her great steel industries, and her great wood-working industries—is simply enormous; whereas, as a matter of fact, the annual production of lumber within the state is now barely sufficient to make coffins for the dying. Such is the sad condition of the state that for more than thirty years produced more lumber than any other state in the Union—that produced the bulk of the lumber, in fact, used in the East. And yet there are 13,000,000 acres of mountain land in Pennsylvania that are fit for nothing but the production of timber—or rather were fit for nothing else until the hand of man rendered almost half of that area altogether unfit for anything.

The difficulty was not that thoughtful men did not see what was ahead and call a halt, but that public opinion on the matter had not been sufficiently aroused. More correctly, it had not been aroused at all. There was no public opinion on the subject of forest devastation. The general public did not know there was a forest problem. The Pennsylvania Alpine Club is one of the agencies formed to develop public opinion. Or, at least,



ROCKS ON HAYCOCK MOUNTAIN

This rock stands over fifty feet in the air, leaning toward the northwest. When we climbed it we found it really "rocked." Harvey Snyder and J. W. Snyder at the top.

acres of finest timber that gave William Penn's colony its name. Nowhere in the world are there deserts more appalling than the six million acres of denuded forest lands in Pennsylvania that stand today as a living reproach to the human rapacity and greed that mowed down the timber, and the criminal carelessness that caused fire after fire to sweep through the denuded areas, not only burning what was left of the timber, but actually destroying the very soil itself, and rendering it powerless to produce further growths. And only 250 years separate



FORMIDABLE OBSTACLES

The Alpine enthusiasts were not daunted by even such rocks as this, encountered on Mahanoy Mountain.

if it were not organized expressly for that end, that purpose has become a part of its object.

How very small an acorn the Pennsylvania Alpine Club really was at its inception will be gathered from the fact that its original membership totaled six. Colonel Henry W. Shoemaker, member of the Pennsylvania state forestry commission, conceived the idea of such a club.

Colonel Shoemaker is much interested in folk-lore, old legends, and the history of the pioneers. One afternoon in the spring of 1915 Colonel Shoemaker was on his way to interview an aged hunter back among the hills of Snyder County, to get from him the story of the last bison hunt in Pennsylvania. With Colonel Shoemaker were George W. Wagenseller, editor and owner of the *Middleburg Post*, and J. Herbert Walker, then editor of the *Lewisburg Journal* and now of the editorial staff of the *Altoona Tribune*. The high point of old Mahanoy Mountain, grim and austere in the fading light, seemed always to be in

sight of the party. The suggestion was made that it would be a fine thing to have an organization to explore the Pennsylvania mountains and climb the higher peaks of the state, to study the flora and the fauna, and to obtain such other data as would help in creating a greater love for the beauties of the state and inculcate a desire for the conservation of the state's natural resources.

Out of that suggestion grew the Pennsylvania Alpine Club, consisting of Colonel Shoemaker, Mr. Walker, Mr. Wagenseller, Edwin Charles, Henry F. Charles and F. C. Betts, and William M. Schnure. From that hexagonal acorn has grown the present club enrollment of more than one thousand members,

with local chapters at Altoona, Williamsport, Doylestown, Loch Haven, Middleburg, Reading and many other cities.

Colonel Shoemaker was elected president and Mr. Walker secretary, and both are still serving in their



LOVELY VIEW FROM THE MOUNTAIN

This is at Peach Bottom, near Furniss, Pennsylvania, on the Susquehanna.



A GROUP OF ALPINISTS ON HIGH TOP, SNYDER COUNTY

Bottom row, reading from right to left, first four—Col. Henry W. Shoemaker, president; Henry F. Charles, guide; J. Herbert Walker, secretary, and John H. Chatham, bard of the club.

respective offices. Mr. Walker is also the editor and compiler of the association's year book.

"The Pennsylvania Alpine Club," to quote President Shoemaker, "is more than an idealist's creation; it is a power for good in the spiritual life of Pennsylvania. It was formed with the idea of climbing the highest but especially the lesser known mountain peaks in our state, to popularize the scenery of our mountains, to hammer home the slogan 'See Pennsylvania first,' and to encourage healthful outdoor life. It carries with its plan the study of the historical associations clustered about the mountains, the folk-lore and traditions, as well as the trees, flowers, birds and animals which have formerly and do at the present time inhabit their slopes. It calls for the effort to be made to preserve the natural aspects of the mountains against the vandal ganistermen and the rapacious lumbermen, to preserve the vanishing wild life, the birds and animals, as well as the purity of the streams which flow from these mountains, and above all to use every effort to *prevent forest fires*. Forest fires are the great destroyers of the pristine beauty of the Pennsylvania highlands.



A MAGNIFICENT VIEW

From Mount Riansares, which was climbed by the club last May, looking west into the eastern end of Nittany Valley.

They denude the hills of their timber, they drive away and kill the birds and animals, they dry up the springs and streams, they turn fair stretches of scenery into desert wastes, they are the foe of everything that is beautiful and good. The members of the Pennsylvania Alpine Club can prevent forest fires by co-operating with the proper forest officials, but above all, by creating a general sentiment appreciative of natural beauty and economic value to our climate of forests and water supply."

The first mountain ascents were made by the club during the year 1917 and included the climbing of Mahanoy Mountain, in Northumberland County; Mt. Logan, in Clinton County, and Blue Knob, in Bedford County. The next spring Mt. Parnell, in Franklin County, was climbed. Then, on account of the war, there were no more ascents for a time. But in 1919 Red Top, in Centre County, and High Top, in Snyder County, were ascended, and the club visited the tract of virgin timber in Snyder County which has subsequently, and partly through its efforts, been created a monument, under the name of the Snyder-Middlesworth Monument, in memory of two famous Pennsylvanians.

The Snyder-Middlesworth Monument consists of a tract of 250 acres of virgin hemlock forest that was somehow overlooked by the lumbermen, and passed along to the state with some comparatively worthless, cut-over forest lands. In that tract of 250 acres no forest fire has ever burned. No ax has ever rung within its boundaries. Hemlock trees, estimated to be fully 250 years old, and so huge that two men can not span them with their arms, here tower aloft. Four or five of these trees together contain sufficient lumber to build a big house. Here



THE "OLD GUARD"

These are the original members of the Pennsylvania Alpine Club on the summit of Mahanoy Mountain. Left to right, top row: G. W. Wagenseller, Henry P. Charles, Col. H. W. Shoemaker, F. C. Betts. Bottom row: W. M. Schnure and Edwin Charles.

one can walk through a forest that is exactly like the forest the Indians trod before ever they saw a white man. And in perpetuity the lad who reads of the journeys of the Leatherstocking can go to this sacred precinct and see for himself what the wilderness was like when La Longue, Carabine and Chingachgook trailed the savage catamount or the still more savage Iroquois.

During the years 1920 and 1921 a number of peaks in the central part of the state were climbed, including Mt. Davis, Mt. Riansares, and North Mountain, which was climbed twice. Professor LeRoy Jeffers, secretary of the Associated Mountaineering Clubs of North America, acted as guide in the ascent of Mt. Riansares.

In some respects the Pennsylvania Alpine Club is unique. Dealing as it does with God's outdoors, it has neither dues nor initiation fees. It is a club for all. Every one is welcome to join, and members are elected for life. It is more than one of the forces that are making the world safe for democracy. It is creating democracy itself. Every one enrolled is registered to work for the preservation of Pennsylvania Beautiful, for the protection of God's handiwork, and against the encroachment of greed and commercialism.

"Outwardly," as Mr. Walker has expressed it, "there is little evidence of the work of the club, with the exception of the fact that throughout the state the organization has been able, in a way, to inculcate a spirit of co-operation among lovers of nature in their efforts toward the preservation and conservation of the state's natural resources."

That sounds like very little. Actually it is much. On the very best of authority we have it that only a little leaven leaveneth the whole lump. The Pennsylvania Alpine Club is that little leaven that is helping to make effective a great lump of sentiment hitherto unleavened. Like the dam that gathers and harnesses the previously

wasted energy of the running stream, the Pennsylvania Alpine Club is gathering and harnessing that spiritual power called sentiment—in this case the sentiment for the preservation of Pennsylvania's natural resources.

Starting utterly unheralded, with no blare of trumpets, the Pennsylvania Alpine Club attracted attention by the sheer novelty of its method. An American flag was planted on the summit of Mahanoy Mountain, a few words were spoken. That was all the ceremony at-

tendant upon that first mountain climb. But the newspapers got hold of the matter and interest was at once aroused. Within a few months the original six climbers had grown to number scores. Now the club numbers more than 1,000 and is growing fast. We are told that nothing succeeds like success. It is true. The Pennsylvania Alpine Club is a going concern. It is a success. Persons who might have been slow to join the original half dozen members, for fear of ridicule, are now glad to be identified with an organization that contains scores of prominent men, such as Governor William C. Sproul, Gifford Pinchot, Dr. J. T. Rothrock, Dr. B. H. Warren, Dr. Thomas Montgomery, James Oliver Curwood, Emerson Hough, Enos A. Mills and other well known lovers of the great outdoors.

No one can estimate accurately the value of a work like that of the Pennsylvania Alpine Club because it deals largely with spiritual values. But so much is certain: no one ever ascends a Pennsylvania mountain or visits a Pennsylvania forest park

without coming away resolved that the hand of greed shall be stayed and that the wonderful handiwork of God as seen in the woods shall be preserved.

Yet not all of the club's efforts have had to do with the spiritual. The club has a concrete program of accomplishment. It has aided the state forestry department in many ways. It has made an active fight against

[Continued on Page 54]



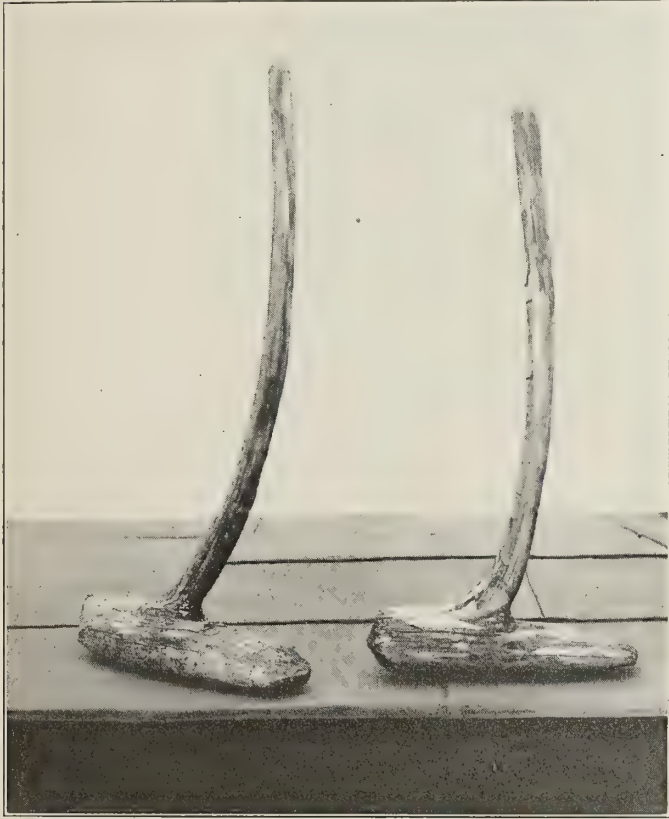
A FEAT TO CLIMB TO THE TOP

This shows Charles F. Cook, of Somerset, getting to the top of "high spot" rock, Mt. Davis.

Then and Now

BY JOHN D. GUTHRIE

PROGRESS is mostly a matter of comparison. It is largely by looking back over the trail we have passed, that we realize how much we have gone ahead. Twenty years ago about all the forest ranger got from Uncle Sam was a badge and \$75 per month and a



GRUB HOES OF YEW, MADE BY FOREST RANGERS OF AN EARLIER DAY AND USED FOR FIRE FIGHTING

supply of monthly service report forms. He had no comfortable ranger station; he was lucky if he was furnished a tent; his district was likely to be a half million acres or more. What fire tools he was fortunate enough to have, he had to purchase himself. A forest telephone would have almost scared him to death.

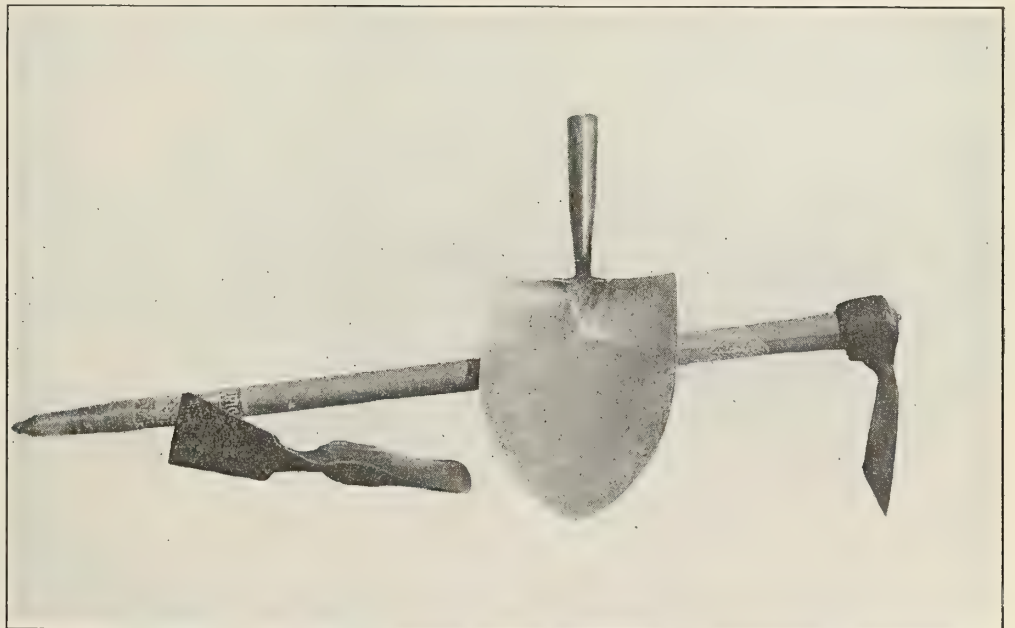
One September day, back in 1903, a forest ranger and his nephew were patrolling a portion of what is now called the Santiam National Forest, in the central Cascade Mountains region of Oregon. These two men discovered a forest fire, small, but woodsmen that they were, they well knew that if not

extinguished at once it might require days and nights of the hardest fighting to put it under control. Tools they had none but their small belt axes. Resourceful, they used what was at hand, and so they felled a nearby Oregon yew tree and from it fashioned a fire-fighting tool that must have been the father of the modern ranger's eye-hoe. These old-time rangers put out the fire, left their hand-wrought tools on the fire line and went on their way, leaving a green mountain side instead of a black one. In September, 1921, 18 years later, C. C. Hall, Forest Supervisor of the Santiam National Forest, found the two yew-wood grub hoes where the rangers had left them when they put out that fire on Owl Ridge in 1903. The rangers were William R. Mealey of Foster, Linn County, Oregon, and his nephew, K. S. Mealey, and I am going to let Mr. Mealey tell the rest of the story:

"It may further interest you to know that the forest rangers were my nephew and myself, and that the Owl Ridge, Swamp Mountain, Two Girl, and Bear Lake country was a part of our work.

"That was quite a while back and conditions were not so handy as they are now. We did not know much about the air patrol, lookout stations equipped with fire finders, telephone systems, and the fine system of trails the government service has established throughout the National Forests in the Santiam region and elsewhere as well. I believe the remains of the fire where the hoes were used still can be found; it was not a large fire, but would doubtless have developed into one had not the 'two unknown rangers' got to it in time.

"In those days, away before the Forest Service built the fine system of trails and telephone lines through the mountains, it was often necessary for rangers to carry



THE MORE MODERN TOOLS OF A FOREST-FIRE PATROLMAN—TAKE-DOWN SHOVEL AND MATTOCK, AND COMBINATION MATTOCK AND AX

their supplies and fire-fighting tools on their backs, often for days, over roughest kind of country. Necessarily we contrived to make our loads as light as possible. Necessity being the mother of invention, we conceived the plan of making our fire-fighting tools where and when we needed them, thus saving the extra labor involved in carrying mattocks with us.

"In fact, it is remarkable how well a digger made from a tough yew tree, the cutting edge hardened in a fire, will do. In almost any ordinary circumstances they are quite as efficient, in the hands of a practiced woodsman, as a mattock. They are light and strong. The handle will not break out and they can be readily sharpened when the edge becomes dulled. Little did we think so many years ago, so far away in the great forest, with so much depending on our individual efforts and with so little to do with, only our belt axes and water sacks and such a relentless foe to contend with, that the relics of the desperate fight for the preservation of the timber lands would one day be brought to the notice of the Forest Service.

"You may well believe me when I say that many a grim battle that has never been heard of has been fought in times past between rangers and the destroying element for the preservation of the forest lands."



THE WAY THE TWIG IS BENT THE TREE INCLINES

Dr. Carl C. Forsaith, New York State College of Forestry, Syracuse University, explains the cause for the peculiar formation of the white oak tree in the accompanying picture. Dr. Forsaith made the photograph recently and states that the tree started from a seedling about seventy years ago and grew in a fence row. It received the peculiar bend shown in the picture through its efforts to escape the obstacle that the fence placed in its way. The tree, therefore, took a horizontal course under the fence until it found the freedom it was seeking and then started upward. The tree is now about two feet through and the horizontal bend about six feet in length. It is located in Auburn, New Hampshire, and is one of the best known trees in that region.

Forest Taxation in Minnesota

[Continued from Page 35]

and is not specifically designated either by the Commission for inclusion within exempted agricultural or commercial zones surrounding settlements or agricultural developments or by its respective owners, who shall declare it their purpose to otherwise utilize it. Conforming with the general tax plan of the State, all taxes will be levied upon assessed value of one-third the true value and will comprise two sorts, an annual bare-land tax and a yield or products tax on the forest products cut.

A unique feature of the plan is the care with which the financial interests of each local community are safeguarded against wide fluctuations in tax income from its forest-producing lands. Thus the annual tax income for the entire district is to be distributed back to the counties, townships, and school districts comprising it, according to the total assessed value of the forest-producing land which each contains. The annual payment to each should vary but little from year to year so long as the total amount of forest-producing land in the district and in the given local tax unit remains approximately the same.

This is particularly so because of the arrangement for collecting the yield taxes through the sale of tax savings certificates to the owners of forest-producing lands. The amount any owner will be expected to take up each year will vary and be graduated according as his forest is a very young one or one nearing maturity. By this means the large payments into the fund, which would otherwise result in wide fluctuation if the yield tax was paid all at once, will be avoided, the final cash payment in most instances being reduced to a relatively insignificant amount.

The promoters of this movement for better forest taxation sought and are receiving the support and co-operation of the State Forester, State Tax Commission, and Federal Forest Service. It is expected also that this plan will be approved and recommended to the next legislature along with other proposed changes in the tax laws by interim committees of both the Minnesota House and Senate, which have been studying the needs for revision of the State's general tax system.

While the Minnesota plan is applicable only to states where classification of property for purposes of ad valorem taxation is permitted by the state's constitution, it nevertheless represents a step forward in the knotty problem of forest taxation.

HOW'S THIS FOR CO-OPERATION?

"Your good letter of December 4, addressed to American Foresters, is received. There are enclosed checks to the amount of \$37.00, together with a list of boosters for the Association. This list, together with two who are already members, comprises 100 per cent of the Timber Section of Internal Revenue."

NOW, DO YOUR PART!

THE BANK OF NATURE



Will pay you dividends of real cash for a hundred years - Read about it!

A great horticulturist once wrote, "The Bank of Nature is the most substantial financial institution in the world. You cannot shatter its foundations. It lives forever. It never fails. It cannot be destroyed. When you put your money in it, your dividends go on year after year—often interminably.

Why not get your share of Nature's dividends "from the safest, most profitable and lasting of all the industries that spring out of Mother Earth"—the paper shell pecan grove?

Why not grow big delicious pecan nuts on your own pecan orchard in Southwest Georgia, "where the deep rooted pecan tree unlocks the treasure vault of Nature and turns sunshine into dollars?"

Why not establish a new source of revenue that will handsomely reward you, your children and your children's children for generations to come?

An orchard of big pecan trees is something solid, real—not a vague prospect or dream. It is an investment with many remarkable features.

The trees themselves are forest giants. The yield is so prolific that the pecan tree is called "one of the most astonishing food engines in all Nature, yielding literally barrels of nuts." If every big tree produced tons instead of barrels of nuts the greatly increasing demand for paper shell pecans would still be unfilled. "We have now one pecan where we ought to have a million," because encased in the perfected paper shell of the pecan Nature has produced the most delicious, most nutritious of all nuts.

What a splendid idea! To have a whole orchard of trees growing these big, fine pecans. To have an increasing supply of them year after year, once your established orchards come into bearing. To receive a dividend check at the end of each year in payment for your nut crop. To know that when you have spent these dividends you were subtracting nothing

Who knows? This step today may have a happier outcome than you may ever dream—for pecan trees become valued friends, even permanent benefactors. Cared for when young—as a result of your slight monthly payments—they care for you and your family later on. Isn't this worth acting on today?

from the ever-increasing value of your orchard.

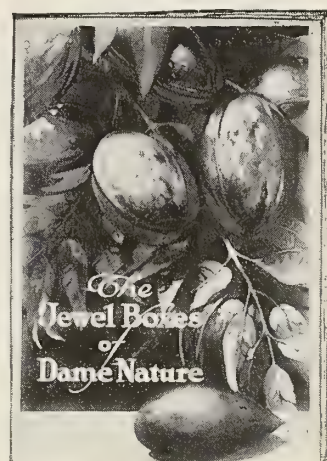
Here indeed is the ideal savings plan for you. A plan that enables you to invest small savings on a basis so easy you never miss the money. A Co-operative Profit-Sharing Plan by which your orchards are established for you, cared for and cultivated, your nuts gathered and marketed, by practical experts—all without taking a minute of your time from your own line of endeavor.

The many benefits, the exceptionally attractive features of this Co-operative Plan which appeal to every ambitious person, are all explained in a wonderful book entitled

"The Jewel Boxes of Dame Nature"

Send for a copy today. It is one of the most interesting books you ever read. In it are beautiful, inspiring pictures that will portray to you the wonders of pecan growing; and will show why so many people have become interested in the Keystone Pecan Company and their Georgian Prize Pecan Orchards—people like yourself who wish to avoid frivolous investments, making every dollar count big. The pecan orchard puts you on solid basis for future profits upon a liberal profit-sharing system, which is endorsed by bankers and business men of the South.

This booklet is absolutely free, and in no way obligates you. Simply fill out the coupon below—NOW, while a limited allotment of these Georgian Prize Pecan Orchards is being offered at a very low price and on astonishingly easy payment terms—about 17c a day.



This is the book that will tell you in simple language the story of this new and fascinating opportunity.

The big rich pecan—key to this big investment opportunity.



Reference, Keystone National Bank, Manheim, Pa.

Keystone Pecan Company

Box 422, Manheim, Pennsylvania

Kindly send me booklet, "JEWEL BOXES OF DAME NATURE," containing complete facts about the Georgian Prize Pecan Orchards and your new Small Payment Savings Plan. This does not obligate me. The booklet is entirely free.

NAME.....

STREET.....

CITY.....STATE.....

Idle Lands in Louisiana

APPROXIMATELY 13,000,000 acres of denuded lands are lying idle in Louisiana," according to Carleton F. Pool, of the State Department of Conservation. "This is about 45 per cent of the entire territory of the State. There are still about four million acres of virgin timber, or about 14 per cent of the entire State area. The only use made of the 13,000,000 acres of denuded land is the grazing of a limited number of cattle, and thus it is producing no revenue of moment. There can be no real measure of prosperity while nearly half of the land of the State is lying idle."

But Louisiana is not conspicuous in this respect. There are in the pine regions of the South over 100,000,000 acres of denuded land lying idle and most of it is unsuited to agriculture. This virgin forest territory has brought vast wealth to the South in the past thirty years. How much, is indicated by the fact that in Louisiana 57 per cent of the industrial labor of the State is engaged in the lumber business, and nearly \$300,000,000 is invested therein. The 87,644,526,000 feet

board measure of timber now standing in the State, according to the estimate of R. D. Forbes, ex-State Forester, and now in the Federal Forest Service, was worth in 1918 \$631,238,916. If the present rate of cutting is to continue, and new growth is not encouraged, in a few years all of these values will be wiped out, the \$350,000 annual severance tax now paid the State will have to be provided from other sources, and the \$125,000,000 of annual revenue from the lumber business will be lost to the State.

This will mean increased taxes on every form of property, the depriving of thousands of persons of their present means of livelihood, an enormous increase in the price of homes, and the injury of farm lands by droughts, which always follow the destruction of forests.

In view of these facts, is not the practice of forestry on an extensive scale worth while? And is not the fact that at present about a quarter of million acres of denuded land are now seeking to enter into contract with the State for reforestation a matter of deep significance?

The Pennsylvania Alpine Club

(Continued from page 50)

the placing of poison in the woods by agents of the state game commission to kill crows and predatory animals. Other creatures as well as the predatory kinds have died by the hundreds from these misdirected efforts. Largely through the work of the club this practice has now been stopped. Many valuable data concerning stream flow and pollution, and methods of conserving fish life, have been collected by the club. An active propaganda has been carried on urging caution with fire in the woods.

As one of the agencies making for the health of the people, the preservation of natural resources, and for real democracy, the Pennsylvania Alpine Club is already a potential force. How great its future influence may become no man can at present truly tell. But it has already become a sturdy sapling and gives every promise of growing into that great oak which traditionally comes from a little acorn.

National Forest Policy

What meaning does that term convey to you?

"Does it suggest woodland depths, tree-fringed skylines, glen and stream, forest excursions, or Christmas trees? If so, well. Well also if it suggests the scars of torch and ax, idle lands, dwindling streams, and other national errors that call for redemption. But does it also bring up pictures of ships at sea, laden trains, busy mills, flashing axes, log-strewn rivers, marvelous machinery—all the kaleidoscopic scenes of perhaps the most picturesque and varied of all men's struggles to make earth yield him the means of life and comfort?

"Even if it does not, as it should, suggest any

of these true and intimate pictures, yet some day, in some fashion, you shall hear forest voices as truly as though you were with Robin Hood and his merry men in the green aisles of Sherwood."

These short paragraphs are taken from Mr. E. T. Allen's article, "America's Transition from Old Forests to New," which will begin in the February number of AMERICAN FORESTRY. They are expressive of the human and entertaining style in which Mr. Allen has handled a big subject. This is one of the most interesting and informative articles which has appeared in AMERICAN FORESTRY for many months. Do not miss it.



The crate on the left was designed by a Weyerhaeuser engineer to replace the one shown on the right.

The diagonal bracing and 3-way corners make a strong, rigid crate that absorbs the bumps and keeps the strain off the contents.

Internal bracing holds the contents in place. Liberal use of resawed lumber for sheathing affords ample protection against damage from the outside. The dealer will receive unmarred merchandise.

Curiously enough the new crate shows a number of savings over the old one.

This new crate is made up in sections on jigs. It is delivered to the packer in sections. He is not required to do any cutting or fitting.

An instance of what Weyerhaeuser Crating Engineers are doing for shippers every day.



This Crating Service May Do as Much for You

AS an example of the kind of thing that is making business officials sit up and look to their packing, consider the crates pictured above.

The crate on the left was designed for a manufacturer of washing machines by a Weyerhaeuser Crating Engineer.

It takes the place of the crate on the right which used over 11 feet more of lumber. It is stronger in every way—a reliable protector of its contents.

It is 39 pounds lighter. A saving in freight alone that amounts to 3900 pounds per car shipment. No mean item in these days of high freight rates.

Furthermore it represents a saving in labor costs. This new crate is put together in half the time required to make the old crate.

ANY business man who looks into Weyerhaeuser scientific crating is liable to find himself dealing with *big-figure savings*. But the greatest thing this service does is to insure the delivery of merchandise in perfect condition.

As a result the shipper's customers are pleased. It is service that they recognize and appreciate. Dealers have tired of the damage claim nuisance. They want goods fit to go direct to the salesroom.

Shippers who have adopted scientific crating report other advantages and savings. It speeds up collections, decreases sales resistance and gives to their salesmen a new selling tool. Safe packing builds good will.

THE services of the Weyerhaeuser Crating Engineers are offered to the executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 South La Salle Street, Chicago; 220 Broadway, New York; Lexington Building, Baltimore; and 4th and Robert Streets, St. Paul; and with representatives throughout the country.



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Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



The Regeneration of the Highlands

[Continued from Page 25]

70 years. At present the land fetches a rent of not more than 6d. an acre for sheep. The annual produce of each acre is only 3 pounds to 4 pounds of mutton, and 4 pounds to 5 pounds of wool, or a few haunches of venison. Each acre is capable of producing from 2 to 3 tons of timber per annum.

"Can we grow timber in Scotland that will compete with foreign timber? Here is the answer ready to hand. (We were passing through Invergarry at the moment.) Here is a small wood of some 30 acres of spruce which was planted by Mrs. Ellice, the proprietor, about 43 years ago. It has the biggest yield per acre of any forest in Europe. We have taken the measurements carefully, and we find it contains 10,000 cubic feet of timber per acre. This is a record. It is nearly 2,000 cubic feet above the highest previously recorded figures for Europe. The present value of this timber is £200 per acre, or an average of £6 per annum per acre for 43 years."

TIMBER A PROFITABLE CROP

In this neighborhood the Forestry Commission has acquired, by feuing, over 9,000 acres of land suitable for immediate planting, at an annual feu-duty ranging from 1s. 8d. to 2s. 8d. per acre. Up to a rental of 3s. an acre, with average returns, timber is a profitable crop. Of this land, over 1,000 acres have already been planted, chiefly with spruce. There are 130,000 seedlings and saplings in the nurseries. The heavy rainfall and the excessive moisture is specially conducive to the rapid growth of spruce, as the example already quoted testifies, and it is proposed to put almost the whole of this land under spruce. In thirty years' time the first crop should be ready for pulping for paper making. The minimum forest unit which is required to keep one pulp mill in full and regular employment is 4,000 acres. When this area is full bearing it should be capable of supporting two pulp mills. If the Commission is enabled to carry out its plans the first pulp mill should be established in thirty years, the forest industries should commence, and the forest should take its full place in the life of the people.

"Every 100 acres planted," said Lord Lovat, "will give regular employment to one man. If this same land were under sheep, a single shepherd would be quite sufficient to look after 2,000 acres. That is to say, the whole of these 9,000 acres planted with trees would give permanent employment to 90 men, as compared with five men who would be all that would be required to look after sheep on the same land. Forestry from the commencement gives employment to twenty times as many people as

sheep farming. But that is only the beginning. As soon as the forest reaches the productive stage—when thinning commences—the number of people employed will be doubled. Even that is not all. When the forest industries are established in full working order, the number of people employed in and about the forest and its subsidiary industries will be doubled again. So that the 9,000 acres will give employment to from 300 to 400 people, instead of the original five shepherds.

"Many of these men will be permanently employed full time. Others will be employed during the winter months only for half the year. For them small holdings will be provided, and the winter is exactly the time when small holders have practically no work to do on their own land. They would work all summer on their crofts and all winter in the forest. In addition to their pay, the increased population would afford them a better market for their produce. For the small holder this means all the difference between prosperity and penury.

"If only the land reformers of the Highlands," added Lord Lovat, "knew these facts and appreciated their significance for Scotland, they would become the most enthusiastic advocates of afforestation."

DEVELOPMENT OF LATENT RESOURCES

The Forestry Commissioners have already acquired in Scotland 60,000 acres by feuing and 30,000 acres by purchase. The average rate of feu-duty is 1s. 4d. per acre, and the average purchase price is 24s. per acre. In the development of the latent resources of this land lie the strongest hopes for the regeneration of the Highlands. All this work was threatened with extinction by the report of the Geddes Committee. The government, with a full sense of its responsibility, decided to continue it for another year with somewhat curtailed resources. But it only lives from year to year, and forestry requires long views. Money spent on forestry is not squandered. It represents a system of national thrift, investment, and development.

GEORGIA ASSOCIATION CAMPAIGNS

The Georgia Forestry Association is mustering its members for an aggressive campaign against the forest-fire evil in Georgia. A long period of extreme dryness this fall, accompanied by a heavy crop of leaves which fell before the heavy frosts came, combined to make one of the worst fire seasons in recent years. Heavy damages resulted from forest fires throughout northern Georgia. Many of these fires are due not only to carelessness and incendiarism but also to a lack of interest and to an indifferent public sentiment throughout the State.

"During the winter months of last year, the Association is reminding the people of

Georgia the repeated burnings and timber loss in southern Georgia brought on a continual pillar of cloud by day and a torch-like procession by night which any thinking citizen should have been heartsick to see."

Announcement has just been made to the effect that the Association has secured the services of Mr. Thomas W. Alexander, of Atlanta, to have charge of the Association headquarters. Mr. Alexander is a forester from the State University of Georgia and has already begun the formation of forest clubs throughout the State as one step of crystallizing public sentiment against the forest-fire evil of Georgia.

EFFECTS OF FOREST FIRES ON FISH

In 1900 Slippery Brook, a tributary of the Saco River, Chatham, New Hampshire, offered excellent trout fishing. During May, 1903, a forest fire started in the brush that had resulted from extensive cutting operations and burned over three thousand acres of the brook watershed. Owing to the large amount of brush scattered through the remaining growth, the fire was very intense and burned into the heavy duff soil, creating much ash. Following the fire there were two days of heavy rain. After this rain large numbers of dead fish were noticed along the stream. It is presumed that the large amount of ash carried into the water filled the stream with alkaline silt, which killed the fish. No observations were made to ascertain the presence of dead fish resulting from the high temperatures of the water at the time the fire occurred. In this case, as in most others, valuable information is wanting from lack of observation. Although the fishing conditions have improved since the destructive effects of this fire on Slippery Brook, the improvement has not been sufficient to bring the stream back to the condition existing prior to the fire.

An interesting letter was received from a writer in Louisiana advising as to the effects of forest fires on fish. It appears that one of the large cypress lakes was partly dried up during the long-continued drought during the summer. A fire started in the upper end of the lake and burned the leaves, timber, and other debris in the bottom, and in some places made holes three and four feet in depth. The fire raged for several weeks until all the vegetable matter and growing trees at the upper end of the lake were destroyed. Later on rains fell and the lake arose to about normal level. The ash was held in suspension and caused the death of a large number of fish. It is very probable that this lake will be unsuited to the propagation of fish for some time. It will be necessary for the ash to settle and become coated with silt and mud before a new plant or vegetable growth will develop.

America's Transition from Old Forests to New

By E. T. ALLEN

An economic story, rich in sentimental and historical treatment, of the surging struggle into which the American people are being swiftly drawn by the compelling exigency of providing new forests to replace the magnificent old growth which we have used with lavish and thoughtless disregard of the morrow.

It will begin in the February number
of
AMERICAN FORESTRY

For twenty-five years Mr. Allen has been studying our forest problems from the viewpoint of the forester, the lumberman, and the public. Few, if any men, have had a better opportunity to master the subject in all its conflicting details. "To discuss it so that the lay citizen may feel that he has a fairly basic grasp of all sides instead of

feeling bewildered by disputing experts," says Mr. Allen, "requires the greatest possible detachment from any particular school, policy, or propaganda. It calls for the most neutral and impartial treatment. Probably no living man can quite reach it, but that is what I have attempted."

And Mr. Allen tells his story in a simple, entertaining and informative way

Announcement was made in the December number of American Forestry that Mr. Allen would contribute for publication in February an article entitled "The Westward Ho of Lumbering." In view of his handling of the subject in a broader and more exhaustive way, the Editor has, with Mr. Allen's consent, changed the title to the more fitting and expressive one which heads this announcement.

The remainder of the series of special articles which are to appear during the year will be published as previously announced. They are:

- "The Passing of the Piney Woods," by R. D. Forbes
- "The Iron Horse of the West," by Bert P. Kirkland
- "The Blazed Trail of Forest Depletion," by Gifford Pinchot
- "The Long Haul from the Woods," by Earl H. Clapp
- "The Farm and the Forest," by Henry S. Graves
- "The Land Cry Against the Forest," by P. S. Lovejoy
- "Wild Followers of the Forest," by Aldo Leopold
- "The Forests of the World," by Raphael Zon
- "The Coming War for Wood," by Howard F. Weiss
- "Balancing the Forest Ledger," by William B. Greeley

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American Forestry Magazine

Washington, D. C.

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American Forestry Association
and Readers of this Magazine*

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SOUTHERN FORESTRY CONGRESS TO MEET

The Fifth Southern Forestry Congress will convene at Montgomery, Alabama, on January 29, 30, and 31, 1923.

"The Fifth Congress," says Mr. W. D. Tyler, President of the Congress, "promises to be the best we have yet held. Montgomery is central to the entire South, not only the piney woods of the Coastal Plain, but the mountain hardwood region as well. Our organization, which first met at Asheville in 1916, under the presidency of Colonel Joseph H. Pratt of North Carolina, is interested in the progress of forestry in every Southern State, from Maryland to Missouri, and from Florida to Texas. The aim of our annual meetings is to bring together once a year the steadily increasing group of professional foresters and conservationists in this region, and the landowners who, also in greatly increased numbers, are beginning to see in reforestation and wise forestry practice one highly promising solution of that great Southern problem—cut-over lands.

"The officers of the Congress feel that the tide of forestry is steadily rising in the South. During the past year Arkansas formed a vigorous forestry association. The Governor of South Carolina recently called a meeting of some of the State's most progressive citizens to discuss with

him a forestry program for his State. Now along comes Alabama. We understand that the incoming administration is pledged to any constructive program of forestry that is satisfactory to the majority of lumbermen of the State, who own the bulk of the land in need of fire protection and reforestation, and that will not add unduly to Alabama's tax burdens. This is fine news, and we know that the testimony brought to the Congress by men of professional standing and broad business connection as to what forestry has done in other States will encourage the people of Alabama to go and do likewise.

WIDESPREAD INTEREST IN RED- WOOD CAMPAIGN

Upon his return from the East, J. D. Grant, of San Francisco, Chairman of the Board of Directors of the Save the Redwoods League, reports that interest in the movement to save California's gigantic trees is steadily increasing among influential people and organizations.

While in New York, J. D. Grant conferred with Madison Grant, author of "The Passing of the Great Race," and one of the pioneers in the Save the Redwoods movement, regarding the plans for carrying on further work of the League.

"There are indications of constantly in-

creasing interest in the movement throughout the East," said Mr. Grant.

"Continued publicity is being given to our attempts to save the redwoods through metropolitan newspapers and magazines with large national circulation. We have secured the unanimous support of conservation societies throughout the nation, as well as the various automobile and tourist associations. People are awakening to a realization that California Redwoods, one of the marvels of the world, must be saved now or perish for all time."

NEW BIRD RESERVATION ESTABLISHED

A 40-acre tract adjoining the elk refuge near Jackson, Wyoming, has been established as a new national bird reservation by Executive order. It will be known as the Flat Creek Reservation, and will serve throughout the year as a breeding and resting place for the wild fowl and other birds of the region. Late in fall and in winter it will serve another purpose in affording additional pasturage to the elk herds coming down from the mountains in and about the Yellowstone National Park to winter in the Jackson Hole region. Both the elk refuge and the Flat Creek Reservation are under the jurisdiction of the Biological Survey of the United States Department of Agriculture.

THE NATIONAL FORESTS OF NEW MEXICO

An illustrated booklet, entitled *The National Forests of New Mexico*, has just been issued by the Forest Service, United States Department of Agriculture. The booklet describes the Federal timber holdings within the State, treats of the recreation attractions of the region, and touches on the archaeological treasures to be found there in the form of the cliff dwellings of a vanished people.

There are now six National Forests in New Mexico, the publication continues, comprising a gross area of about 9,500,000 acres, bearing a timber stand of fifteen billion board feet of saw timber and furnishing range for 178,000 head of cattle and horses and 428,000 sheep. These forests provide a permanent lumber industry for the region, supply material needed in the development of ranches, farms, and cities, and add stability to the live-stock industry.

The largest National Forest in the United States, we are told, is the Datil Forest of Western New Mexico, containing almost 3,000,000 acres. The most extensive archaeological ruins in the country are found on the Santa Fe Forest. Here are the cliff dwellings of a prehistoric-dawn people, the Otowi and Tsankawi ruins, the painted rocks, and stone lions.

FORESTERS MEET WITH EMPIRE STATE ASSOCIATION

Two important resolutions were passed by the joint conference of the seventeenth annual meeting of the Empire State Forest Products Association and the New York Section of the Society of American Foresters held at the New York State College of Forestry, Syracuse University, November 9.

One of these resolutions relates to a declaration of war on beavers and urges that legislation be passed to check the spread of such depredations which are menacing the forests in the northern section of New York State.

The other resolution recommends the establishment of a forest products laboratory in the northeast section of the United States. This plan, it is understood, is favored by the Secretary of Agriculture. The laboratory would be of inestimable value to lumbermen of the New England and Central States as well as to the forestry schools of the East.

A working plan for the management of softwood timber land was discussed. The plan was intended as a co-operative work between foresters and manufacturing interests. It was offered merely as a suggestion and a basis for a beginning.

Leading lumbermen and paper and pulp manufacturers were represented at the meeting. They appointed a committee for the purpose of examining into the practical application of the plan. The committee will report at the next joint meeting of the two organizations. The plan was made for a working period of ten years. The area covered was 6,000 acres. A report was received from the special committee on legislation for additional forest-fire protection. The report carried the idea that more drastic legislation was not needed, but a more efficient enforcement of existing statutes and better education in the need of fire prevention.

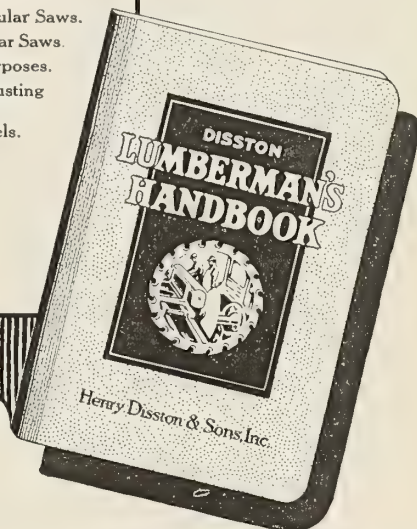
Professor H. C. Belyea, of the New York State College of Forestry, read a paper on the State-wide application of woodlot management, going into the subject in exhaustive detail. The paper was pronounced by those who heard it as the most comprehensive study that has been made on the subject.

INSECT CONTROL IN NORTHWEST

In its insect-control work in the southern Oregon-northern California points (forests of the Northwest) this year, the United States Department of Agriculture treated 69,710 acres; 7,079 trees containing 6,672,490 board feet were felled and the infested bark containing the broods of destructive beetles removed and burned. It is thought that a reduction in the infestation of at least 50 per cent will result.

PARTIAL CONTENTS

General Information About Circular Saws.
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Tools for Fitting Circular Saws.
Inserted Tooth Circular Saws.
Saws for Special Purposes.
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AN apple orchard is a long-time investment and the original cost of the trees at planting time is insignificant compared with the cost of taking care of them until they come into profitable bearing.

Obviously it pays to plant nothing but first-class trees.

A first-class apple tree for transplanting should have a good root system, top large enough to indicate a good free growth, and should be in good condition. Of course it must be free from injurious insects like scale and aphids and free from diseases such as crown-gall and hairy root.

Size without regard to age is no criterion of value. A tree that takes two years to attain a diameter of $\frac{1}{2}$ inch is obviously not to be compared with the same size one-year tree of the same variety. Varieties differ in growing habits. For instance, a yearling Jonathan with diameter $\frac{7}{16}$ of an inch compares with a Stayman Winesap measuring $\frac{9}{16}$ inch.

We offer exceptionally fine apple trees—two-year-olds whose roots and tops have grown two seasons in our nursery—one-year-olds, budded, whose roots have grown two seasons and tops one season. The latter should not be confused with one-year grafts whose roots and tops have grown only one year.

Our two-year apple trees are headed 22 to 24 inches from the ground. If high heads in the orchard are required these trees can easily be trained that way.

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Wild Fowl Lore

[Continued from Page 46]

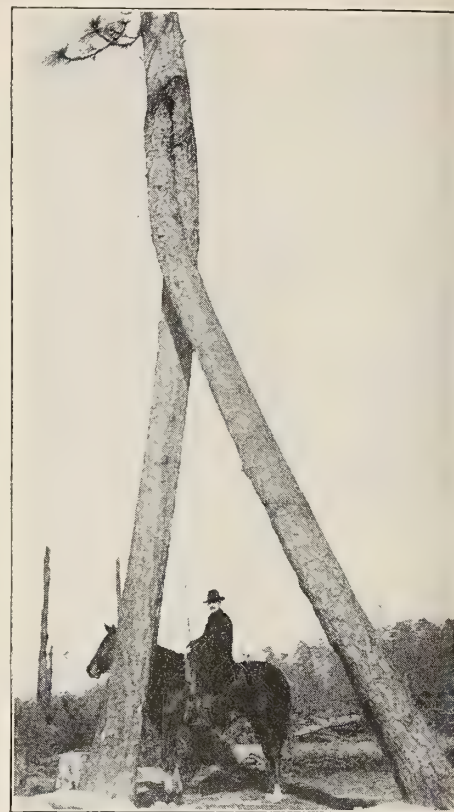
black lines, and mottled in other parts of the plumage. Young birds resemble the female, as a general thing, and the males require time to attain the full feather of the adult birds. Their bills are beautifully tinted with bright color-areas—characters which are lost in museum and other skin specimens. These birds breed from Labrador northward, and, as a rule, line their nests most copiously with down plucked from their own breasts. They generally have some half a dozen eggs to the clutch, of a pale olive color, varying in size according to species.

Audubon's account of the Eider Duck is very full and most interesting. It was being exterminated even in his days; for, in speaking of the "down trade," he states that "the eggers of Labrador usually collect it in considerable quantity, but at the same time make such havoc among the birds, that at no very distant period the traffic must cease."

Then there is that curious little species known as the Masked Duck, a bird of Latin and South America and the West Indies. It happens to be only an occasional straggler in our country, having been shot at various times in widely separated localities in the United States, as on Lake Champlain, New York; Lake Koshkonong, Wisconsin, and once in Massachusetts, near Malden.

Our common Ruddy Duck, known by no less than 57 other vernacular names, many of them fanciful and absurd, is a unique little species occasionally shot on certain lakes in the West. It has a peculiar little spiny tail that holds it erect; and the bird sometimes acts like a grebe, especially when submerging in the water. This bird is hard to kill and very tenacious of life.

Scoter ducks are marine species, and we have four well marked species, namely, the Scoter; the Velvet Scoter; the White-winged Scoter, and the Surf Scoter. For the most part, the bill in the male is highly colored in varying patches; and in this sex, too, the plumage is black, with circumscribed white areas on the head and wings. The females are brown. They are big, heavy ducks of marine types that may be found on inland waters; but they generally flock in salt-water bays and inlets. It is a beautiful sight to see them riding on the billows after a storm. At one time they were very abundant on Long Island Sound, where I collected three of the species. They are known as Sea Coots, Surf Ducks, and Sea Ducks, although they occur inland, and are regular visitors in the winter on the Atlantic and Pacific seaboard; while other species, likewise oceanic, occur in Europe and Asia.



THE MARRIAGE OF THE PINES

Sent to *American Forestry* by an official of the United States Forest Service, the photograph shows a southern yellow pine growing on the holdings of the Pickering Land and Timber Company about 90 miles north of Lake Charles, Louisiana. The tree is about 100 feet high, the lower 20 feet being two separate trees at some early date in its life. The space between the two trees is of sufficient width for a good-sized automobile to drive through.

GREELEY'S ARMY OF 22,000,000

An army of 22,000,000! An army in which every school child in the country has been asked to enlist to combat the national enemy—forest fire.

Chief Forester William B. Greeley of the Forest Service, United States Department of Agriculture, has written the State Superintendent of schools calling attention to the danger from the dry condition of the forest and woodlands in the fall and early winter, seeking to bring before the children the need of care with fire.

According to estimate made by the Forest Service, 33,000 forest fires occur annually; over 60 per cent are caused by human carelessness. Each year these fires burn over 7,500,000 acres, an area greater than Massachusetts, Connecticut, New Hampshire, and Rhode Island combined. Seventeen million dollars of our country's wealth is each year reduced to smoke and gray ashes.

"Can we not," asks Colonel Greeley in his letter, "enlist the school children of the country—there are twenty-two million of them—in an effective army to fight a na-

tional foe that ravages the land before our eyes?

"In your State, and in many others, forest fires are common in the fall. This year drought has made the danger unusually great. Already fires have dealt death and destruction widely in some regions. Your own State will not go unscathed. Rains may diminish the danger, but, even with the most favorable conditions, before snow flies thousands of fires will have run in the forests of the East and North.

"We give too little heed to small fires. They do a vast amount of harm. Our boys and girls should be taught this. They must be made to realize that good citizens are careful not to cause fires.

"The woods are royal playgrounds for young and old. And they are never more so than in the fall. After school, and on holidays, our young people will have glorious times nutting, tramping; some of them hunting in the woods, and frolicking in the fallen leaves.

"The leaves are dry. Sun and wind and frost combine to cover the ground with potential tinder. It does not take long after a rain for the forest floor to become inflammable again. Then a little carelessness or thoughtlessness, and a fire is started.

"I wish I might tell every boy and girl in the United States of the fires that I have seen, and the terrible results of forest fires when they become big, and the harm that even small fires do. I wish I might ask each one of them to promise me his or her help in keeping the forests green.

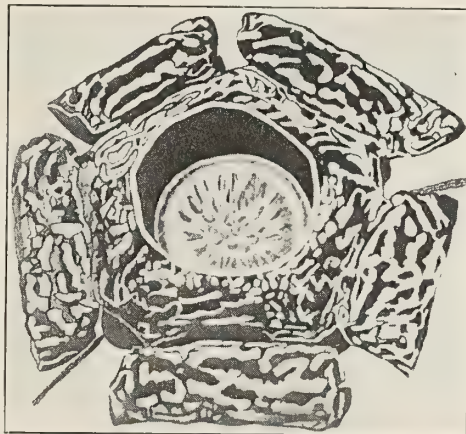
"I cannot do that, but, with your permission, I can perhaps do something like it. I can ask the teachers in every school in your State who learn of this appeal to let their classes know that the Forester wants the help of all school children and their individual pledge to be careful and to try to get others to be careful to prevent forest fires."

LARGEST FLOWER IN THE WORLD

Can you imagine a blossom as large as a carriage wheel? On the island of Mindanao, one of the Philippine group, such a flower was found by some explorers some years ago. Far up on the mountain of Parag, 2,500 feet above sea level, some explorers were wandering when they came across some buds larger than gigantic cabbage heads. Greatly astonished, they searched farther and presently discovered a full-grown blossom 5-petaled, and 3 feet in diameter. It was carried on low-lying, luxuriant vines. The natives call it "Bolo." It was impossible to preserve it fresh, so they photographed it and kept a few petals to press, and found that a single flower weighed 22 pounds. It was afterwards found to be a species of *Rafflesia*, first found in Sumatra, named after Sir Stamford Raffles. The new flower was called

"*Rafflesia Schadenbergii*," in honor of its discoverer.

The immense flower is composed of five round petals of reddish green color, each measuring a foot across. These are covered with numerous irregular yellowish-white swellings. The reflexed petals surround a cup nearly a foot wide, the margin of which bears the stamens. The cup



of the *Rafflesia* is filled with a fleshy disk, the upper surface of which is covered with projections like miniature cow horns. When free from its contents the cup will hold about twelve pints of fluid. The flower is very thick, the petals being three-quarters of an inch in thickness. Its striking beauty is spoiled by its intolerable odor which pollutes the air for many feet around it. It is also a parasite, growing on low trailing vines which are found in great abundance in tropical forests.—H. E. Zimmerman.

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WOOD USED IN WASHINGTON'S
HOME AT MOUNT VERNON

A trip was made to Mount Vernon, Virginia, by W. D. Brush, one of the experts of the United States Forest Service, to determine the kinds of wood entering into the construction of Mount Vernon mansion. This investigation was made at the request of the White Pine Blister Rust Control Office of the Department, since they understood that white pine entered into the exterior construction of the building, and they wished to use the information in connection with their publicity work.

With the exception of several joists under the first floor and the sills which formerly rested on the ground and have since been entirely replaced by brickwork, the timbers are the original ones placed in the house in the period between 1743 and 1774, and are in an excellent state of preservation. Those in the basement are very dark in color, and the surface of the wood has a flaky or crumbly appearance, but seems perfectly sound on the interior. All of the framing timbers seen are evidently red oak, and the large timbers are fastened together by wooden pins. Records show that these red oak timbers were secured on the place, and letters which passed between George Washington and the builders also show that an attempt was made to obtain white oak as its superiority over red oak was appreciated at that time. Evidently the white oak was not so readily available. The adze marks

and often crude hewing of these timbers also testify to their great age.

All of the lath used in the mansion were split or "rived" from red oak timber, which certainly called for great patience on the part of the builders. The lath are about four feet long and are fastened to the studding by hand wrought nails, which are very crude in form and were made at the blacksmith shop on the plantation. The exterior sheathing, interior panelling, floors, stairways, and other finish are southern pine and were also found to be in excellent condition, although some of the original floors are very badly worn. All of the porch work has been replaced several times. The original shingles were cypress, rived from timber secured in the North Carolina swamps. These were replaced last in 1913 by shingles of the same kind.—*Daily News Bulletin, International District.*

OKLAHOMA FOREST LEGISLATION

The legislative program outlined at the last annual meeting of the Oklahoma Forestry Association, provides for specific laws along the following lines:

An Act to create a State Forestry Commission with power to establish a State Forestry Department, to acquire lands for State forests and parks, to have exclusive control and management and provide the necessary funds.

An Act permitting the Federal Govern-

ment to purchase lands under the Weeks Law for a National Forest reserve in Eastern Oklahoma.

An Act to permit any city or town to assume control and management of shade trees on the public streets and assess the initial cost to abutting properties in the manner of other street improvements.

This legislative program will be submitted for final approval at the next annual meeting of the Association, which will be held at Oklahoma City on January 10, 1923.

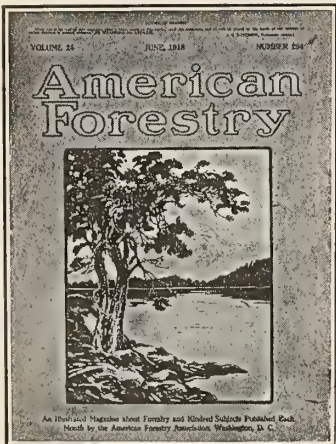
TREE GROWS IN WALL

A freak of nature was revealed at Toccoa, Georgia, when a cotton tree more than eight feet high was found to be growing in the brick wall of the postoffice building. The tree has been there for several years and every one thought its roots got under the wall in some manner and enabled the tree to get moisture from the ground under the building. The contract was let to repair the wall, as it had been standing many years. When the wall was torn down, it was found that the cotton tree, which grew about eight feet above the ground in the brick wall, had never gotten its roots to the ground, but had grown between the tiers of brick and had formed roots some six feet long in the shape of the wall. The mystery is how it obtained enough moisture to grow, when the roots had never touched the ground at any place.

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IDAHO MEN DISCUSS FOREST POLICY

The formulation of an adequate forest policy for Idaho was the object of a preliminary meeting of a committee on forest legislation, held at Boise, November 10 and 11, according to Dean F. G. Miller of the University of Idaho School of Forestry, chairman of the committee.

Mr. Humiston was represented at the meeting by C. S. Chapman, of Portland, forester to the Western Forestry and Conservation Association. Others present and participating in addition to the committee members, were R. H. Rutledge, Ogden, district forester, and George N. Carter, Boise, of the State reclamation service.

"The committee found the present forest law inadequate and out of date, and realized that a greatly enlarged forestry program must be adopted if the industries now dependent upon the forests are to survive," said Dean Miller.

"It was pointed out at the meeting that 40 per cent of the land area of the State is classified as forest land, that lumbering is one of the basic industries of the State, and that if this vast forest area is rightly handled the lumber industry in its present magnitude can be made permanent. But it was also realized that to do this, measures to secure forest renewal must be adopted.

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"The article by Dr. Shufeldt in the August issue of *American Forestry* on parasitic enemies of trees and plants is particularly interesting and valuable to us, as one of the leading industries of the Shenandoah Valley is fruit raising and the parasitic enemies of the fruit trees constitute a serious problem."—*Dr. Charles M. Blackford.*

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American Forestry

VOLUME 29

February, 1923

NUMBER 350

From Old Forests to New
Perpetuating Our Naval Stores

In the Beautiful Shoshone

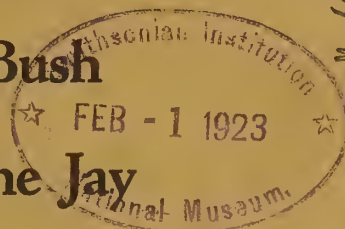
Mount Mitchell

The Land Beyond Kona

A Buried Forest

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Declaration of Principles and Policy of the American Forestry Association

IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1913 shows our forests annually supply over two billion dollars' worth of products; employ

755,000 people; pay \$773,000,000 in wages; cover 470,000,000 acres not required for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquisition of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquisition of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.

Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classifications by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor

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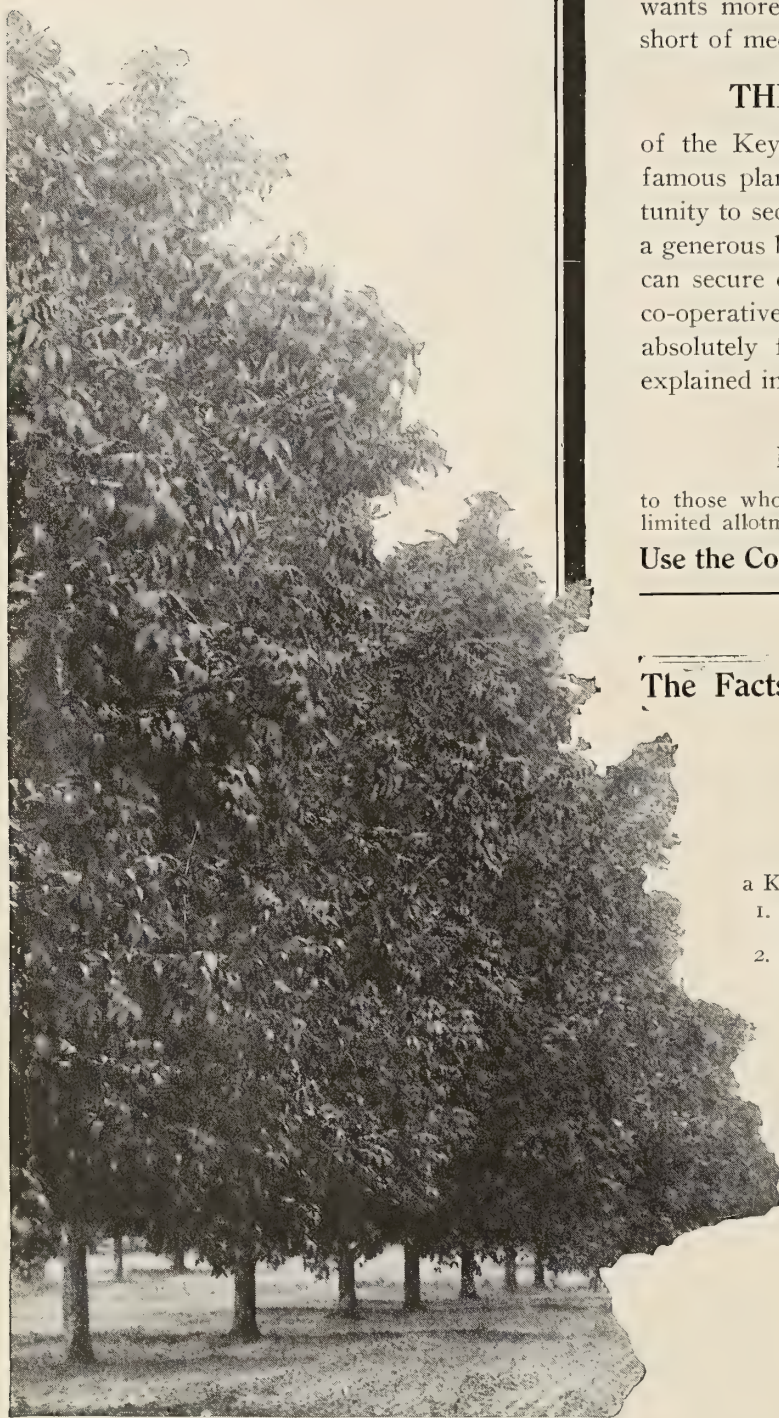
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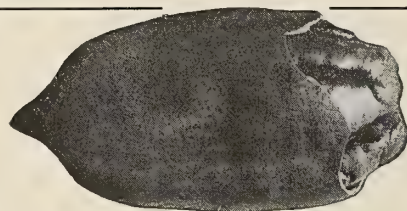
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AMERICAN FORESTRY

VOL. 29

FEBRUARY, 1923

No. 350

America's Transition from Old Forests to New

By E. T. ALLEN

WHAT does the term "national forest policy" convey to you? When it heads an article, introduces a speaker, or denotes the object of legislation, does it connote anything sharp, real, interest-compelling; anything vital and unavoidable in the lives of American men and women?

Does it suggest woodland depths, tree-fringed sky-lines, glen and stream, forest excursions, or Christmas trees? If so, well. Well also if it suggests the scars of torch

and ax, idle lands, dwindling streams, and other national errors that call for redemption. But does it also bring up pictures of ships at sea, laden trains, busy mills, flashing axes, log-strewn rivers, marvelous machinery—all the kaleidoscopic scenes of perhaps the most picturesque and varied of all men's struggles to make earth yield him the means of life and comfort?

Does it mean more homely associations with the use of wood, without which you could not pass a day? The



(Copyright, Cress-Dale Photo Company, Seattle)

ONE OF THE MANY SCENES OF PERHAPS THE MOST PICTURESQUE AND DIVERSIFIED OF ALL MAN'S STRUGGLES TO MAKE EARTH YIELD HIM THE MEANS OF LIFE AND COMFORT. THE FOREST IS STILL THE FOSTER-MOTHER OF THOUSANDS OF WORKERS AND THEIR FAMILIES, WHOSE TOILING GAINS, REDISTRIBUTED THROUGH ALL THE ARTERIES OF COMMERCE, AT LAST IN SOME PART CONTRIBUTE TO OUR OWN LIVELIHOOD

building of homes and their furnishings? The fire that cooks and warms; the matches that light it? The paper you read, printed on wood pulp; the food you eat, crated in wooden boxes, transported in wooden vehicles, hauled over wooden ties, stored in wooden barns, grown in wooden-fenced fields? And, part of all this, the toil and lives of thousands of workers and their families, to whom the forest is still the foster-mother and whose little gains, redistributed through all the arteries of commerce, at last in some part contribute to your own livelihood?

THE PROMISE OF FOREST VOICES

Even if it does not, as it should, suggest any of these true and intimate pictures, yet some day, in some fashion, you shall hear forest voices as truly as though you were with Robin Hood and his merry men in the green aisles of Sherwood. Since the ash-tree Yggdrasil of Scandinavian mythology bound the world together with its roots; since the Tree of Knowledge fruited our destiny in Eden; since the earliest consciousness of a mankind which was evolved and nurtured in the forest and emerged thence to desert and plain with a mind forever grooved by forest loves and fears—even, perhaps, since some still earlier day, when our progenitors sheltered under the tree-ferns, all fresh from the ocean ooze—there has never been a time when the forest has not had mysterious appeals to the human heart.

Which is all by way of introducing the American forest problem. More than ever before, we are told, this problem threatens serious consequences unless a vigorous national policy is adopted; it is one of the most practical economics, and it is withal so full of race-old sentiment that even the forestry experts cannot agree when this is vice and when it is virtue. It cannot be intelligently discussed without an excursion into the past to learn the origin and importance of some of our forest impulses.

For there are relations of man to the natural conditions of his evolution which so tangle the strands of sentiment and practicality that the difficult weaving of these in acceptable pattern lends most of the interest to human history. When expediency and sentiment go hand in hand, progress in civilization is orderly and accepted as

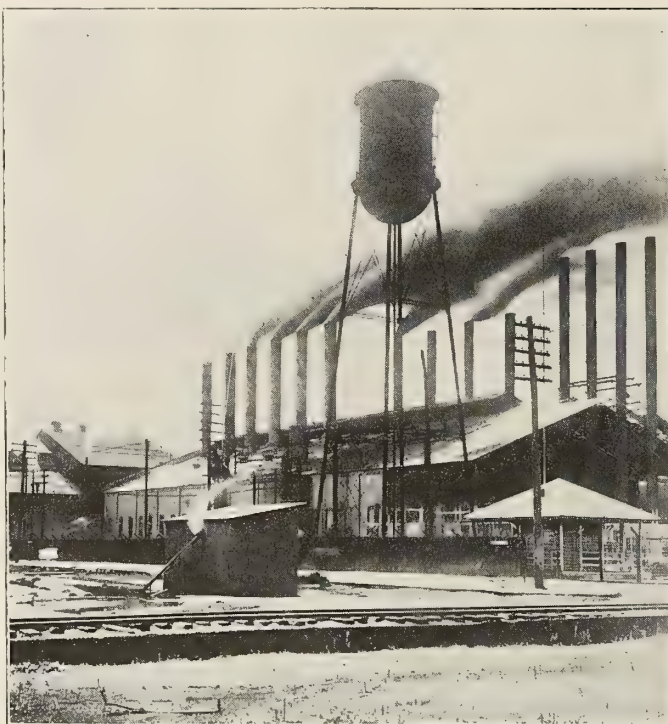
a matter of course. When they do not, we have epic struggles of war, religion, and social economy even slower to end than those caused by conflict of purely practical aims.

So it has always been with the forest, which man can neither preserve nor destroy without denying some deep need, material or spiritual. Even before universal dependence upon lumber added the greatest complication of all, the problem was acute. Kings and nobles reserved vast tracts for sport, and the people went hungry. The word forest itself originally carried no meaning of tree-growth, but applied to any game preserve, though it might be treeless, and the forester was merely a game-keeper.

MAN'S MATERIALISTIC ATTITUDE

In time the governing attitude became materialistic, for man learned that of all things wood best served his growing need for construction, not only of shelter, but of nearly every device and invention. His wood consumption reached a rate per capita which, though varying with its accessibility, was always so high as to make wood constitute the chief volume of all he handled, except food. Meanwhile food production called for the clearing of fertile woodlands, developing in a portion of the population a veritable antagonism to the forest as an enemy to be subdued. The forests fell before these demands, and when they were gone the nation bartered for the supply of countries that had more.

Then came a material, if not spiritual, awakening. Disturbed stream-flow and erosion impoverished the land. Wood shortage affected every activity, even the national defense. The first conservation laws of every country, including ours, have been to assure ship timber. Even in this age of invention, the armies in the World War found victory and defeat balancing with ability to get airplane spruce from the Pacific Northwest, while the noblest groves of England, France, and Germany were cut to meet incessant demand for lumber for trenches, roads, and like military uses. Here at home our entire lumber industry was mobilized to supply cantonments, ships, crates, rifle-stocks, and countless other wooden accessories of war.



(Courtesy U. S. Forest Service)

WHAT DOES THE PHRASE "NATIONAL FOREST POLICY" SUGGEST TO YOU? WOODLAND DEPTHS, TREE-FRINGED SKYLINES, GLEN AND STREAM, FOREST EXCURSIONS, OR CHRISTMAS TREES? IF SO, WELL. BUT DO NOT FORGET THE OTHER PICTURES—THE SCARS OF TORCH AND AX; IDLE LANDS; SHIPS AT SEA; FLASHING AXES; BUSY MILLS, BELCHING FORTH THE SMOKE OF INDUSTRY AND SCREAMING OUT THE TOIL OF A MILLION WAGE-EARNERS

But these modern illustrations take us ahead of our story, besides placing on forest disappearance a military aspect less important than the handicap to all the population at all times. As both became apparent, nations have moved toward some definite forest policy, beginning with conservation of remaining supply and progressing to its renewal. This period has always been one of alarm. Forests grow slowly. Far-seeing men have feared recovery would not bridge the gap between the old supply and the new; also it has been marked among northern peoples, but yesterday forest-dwellers, with a resurgence of forest sentiment anything but materialistic.

THE ALTAR OF DETHRONED SYLVAN GODS

Even while loth to make any sacrifices of civilization to the dethroned sylvan gods, they feel an irresistible call to preserve their last and still-loved sanctuaries; and the instinct of generations of forest wanderers and hunters, as it has led them nearly to exterminate fish and game, no less demands periodic retreats from civilization to the chase, to solitude and to unrestraint.

This hereditary sentiment is often blind and unreasonable, shifting blame and avoiding responsibility for forest destruction, emotionally censuring as greed and selfishness the utilitarian practices actually demanded in less exalted moments, and obstructing practical forestry steps suggested by the more comprehensive economic awakening. But, after all, it assures success. Peoples without it do not succeed, for good forest economy also demands sacrifices they will not make without something more impelling than the good of future generations. Asia Minor, Mediterranean Europe, China—these have destroyed their forests almost beyond redemption. But northern Europe has forestry.

And so with Americans, whose pioneering of the forest westward from Plymouth Rock and Jamestown but revived afresh the memories of a people with northern blood and northern traditions. The spirit of the chase survives in all men today, whether of northern or of tropical origin; but the love of the open fire, carried even to the building in our luxurious steam and electrically equipped homes of the primitive fireplace, dirty and impractical as a heating device, persists only with those whose ancestors for ages knew fire as the symbol of life itself in a northern clime. These were forest-dwellers. As from the Alps to the Arctic tree-line they evolved tribes and tribal customs, forest influences shaped every rite and law until, when the Christian faith supplanted their grim sacrifices, it too accepted the mistletoe, the Yulelog and the Christmas tree.

FORESTS WHICH MARKED A NATION'S DESTINY

To such a people was given again in the New World a forest which no less must mark their destiny. From the Gulf to the Barren Grounds, from the Yukon to the Rio Grande, it knows no international boundary in that in new, more countless ways it touches our daily life. To make it supply our wants and aspirations, employ our workers and contribute forever to our prosperity is an end we seek with common inheritance, common interest, and, it should be, with common viewpoint. And, while luckily we shall never divorce it from sentiment, it is eminently a practical end.

Man needs wood in a multitude of forms. To make the earth supply it, adding the labor and ingenuity required to make it available for his use, is an industry second to none in usefulness and honor. It is not greed that fells trees when men need boards more than when,



(Copyright, Cress-Dale Photo Company, Seattle)

EVER SINCE THOSE DAYS, DIMMED BY A REMOTE PAST, WHEN OUR PROGENITORS SHELTERED UNDER THE TREE-FERNS, ALL FRESH FROM THE OCEAN OOZE, THE FOREST HAS HAD A MYSTERIOUS APPEAL TO THE HUMAN HEART. HERE ONE LOOKS DOWN UPON COAST RANGES OF OREGON, WHERE OUR LAST GREAT UNTOUCHED FORESTS MARK THE SKY-LINE



THERE IS NO CHAPTER IN THE EPIC OF CIVILIZATION MORE ELOQUENT OF THE HARDIHOOD, COURAGE, AND INVENTIVENESS OF MAN THAN THE HISTORY OF THE LUMBERMAN'S CONTEST WITH NATURE. THE ABOVE PHOTOGRAPHS ILLUSTRATE FOUR STEPS IN AN ESPECIALLY HAZARDOUS FEATURE OF LUMBERING ON THE WEST COAST, WHERE MUCH LOGGING IS DONE BY THE USE OF SPAR-TREES AND HIGH LEAD CABLES. THE FIRST PICTURE SHOWS THE "HIGH CLIMBER," EQUIPPED WITH LINEMAN'S SPIKES, BELT, AND AX, CLIMBING THE TREE SELECTED FOR THE SPAR-TREE. IN THE SECOND, HE IS ALMOST 200 FEET ABOVE THE GROUND, CHOPPING OFF THE TOP OF THE TREE. THE THIRD SHOWS THIS TASK ABOUT COMPLETED, AND IN THE FOURTH IS THE SPAR-TREE WITH CABLES ATTACHED AND LOGGING IN PROGRESS

because men need food, hardy boatmen bring cod from the banks or pioneers subdue and plant the wilderness. There is no chapter in the epic of civilization more eloquent of the hardihood, courage, and inventiveness of man in serving his fellows than the history of the lumberman's contest with the elemental forces of nature. He toils in winter far from the shelters of civilization; forest fires threaten him in summer; he hazards life and

the fruits of his work on treacherous rivers. He must be the most fertile of engineers, building bridges, dams, and railroads as need arises and with few facilities, and developing the most powerful machinery to handle his heavy material. His whole life is one of overcoming tremendous odds—a life that forges steel, but breaks glass; a life that makes men. Probably no more than others does it make saints or altruists.

WHO WILL PAY FOR NEW FORESTS

Through this need and this service has evolved our greatest manufacturing industry, that must continue if we are to prosper. Besides furnishing what we must have, it employs more men than any other. Lumber is made by labor; its cost at the mill before transportation and distribution begin is mostly in pay-rolls, returning to the consumer everywhere, whatever his vocation. Communities, even States, depend upon this industry to support agriculture, commerce, and tax revenue. Yet we find it is being called upon to cut our forests perilously faster than they are being renewed, in the face of our neglect to make forestry economically feasible or, what is worse, to prevent forest fire from destroying the natural reproduction attainable without other effort on a large proportion of our deforested land. As the Forest Service of the United States incessantly emphasizes, the problem is not to restrict the use of the forests we have, but to grow new ones to replace them.

Were this an economic problem only, it would be difficult enough; as history proves, for somebody must pay the bills and new forests are never grown until these bills are equitably distributed. Nor does any country ever grow new forests by any magic of legislation or sentiment until it pays to do so, because old ones no longer furnish timber cheaper, competitively, than the cost of growing them. As long as we can get our lumber cheapest through exploitation and waste, that is the way we insist on hav-

ing it, and the lumberman who refuses to furnish it that way soon does not furnish us at all.

A QUESTION OF A THOUSAND IMPULSES

Yet, were it an economic problem only, it would not be as difficult as it is. Americans are no less competent than others to deal with such, or any less just. But, for reasons already outlined, the forest is about the last thing we regard purely economically. A thousand impulses, frequently conflicting, confuse our attitude as individuals, as groups, and as influenced by propagandists. While we want lumber and forest industry, we want the primeval forest. We want unimpaired stream-flow; also range for sheep and cattle. So we fire the woods to grow grass. While we demand that police power shall protect our welfare, we are a free people and resent interference with our right to build campfires where we please; to toss away burning matches and tobacco, and to leave fire-traps when we log or clear our farms. We proclaim the urgency of reforestation, but insist that the land pay taxes which growing



"EVEN WHILE LOATH TO MAKE ANY SACRIFICES OF CIVILIZATION TO THE DE-THRONED SYLVAN GODS, MAN FEELS AN IRRESISTIBLE CALL TO PRESERVE THEIR LAST AND STILL-LOVED SANCTUARIES." AND HERE YOU BEHOLD A SANCTUARY WHERE THE SYLVAN GODS STILL DWELL IN THE VIRGIN FORESTS OF THE CASCADES

forests do not earn. And fundamentally we like trees. It seems criminal to cut them, since we like them so, and the man who does it must be morally deficient and deserving of penalty; but he must not pass this penalty on to the consumer of lumber. That innumerable more trees are destroyed every year by our own carelessness with

[Continued on Page 106]

Naval Stores: Treasures of the Living Pines

BY ELOISE GERRY

BUT doesn't turpentine kill the trees?" asked the northern motorist, who was stopping over night in a hotel near the Georgia-Florida line on his way South for the winter.

"If turpentine is well managed, the trees need not be injured unduly," replied the Southern business man with whom he was smoking in the hotel lobby. "The operator gains a good return on his investment over and above the value of the trees for lumber. Some trees, in fact, are more valuable for turpentine production than for lumber," he added.

part of the turpentine was lost by evaporation, too, after the first year's working, because there was no cup which could be moved up to catch the fresh gum."

"They call it 'bleeding' the trees, don't they?" said the Northerner. "I suppose it's just like tapping maples for maple syrup, as we used to do when I was a boy, in Vermont?"

"Well, no; not exactly that," said the Southerner. "Maple sap is mostly water which contains food materials, whereas pine gum is not the sap of the tree, but an extra secretion, which contains a considerable proportion



A TURPENTINE CAMP IN THE VIRGIN WOODS

The United States produces more naval stores than any other nation—more than 75 per cent of the world's supply, representing an invested capital of more than fifty million dollars. It is a picturesque industry, too, with a life and, practically, a language of its own.

"Maybe so, but I passed many trees that were practically girdled," insisted the Northerner. "These southern pineries look to me like an army of porcupines have been turned loose in them."

"Yes, there is much bad and wasteful work," regretfully admitted the Southerner. "Sometimes trees are killed, but in spite of the treatment they get the majority, especially the second-growth trees about here, yield remarkably and will continue to live and make some growth under unbelievable abuse. They will respond far better, however, when not so severely wounded. There has been a real improvement in methods during the last fifteen years, too," he hastened to state. "Few people nowadays cut 'boxes' or cavities in the wood at the butt of the tree to catch the gum. These boxes weakened the trees and increased danger from forest fires. A large

of oil. If you're interested," he continued hospitably, "I'll take you out to one of my turpentine camps near here tomorrow."

NOT A CASE OF FIDDLE BOWS AND BARN DANCES

The Northerner, who had to wait the next day for some repairs on his car, readily assented and even agreed to get up for an early breakfast. So, shortly after sunrise the next morning, the two men set out in a snorting, rattling, but very agile Ford.

"Tell me more about this industry," invited the visitor. "I never before thought much about where the painter got his turpentine. As for rosin, it calls to my mind only fiddle bows and barn dances. You say rosin is used for sizing paper, and that soapmakers are also large customers?"

"Yes, and I could weary you with a long list of other uses, including such things as lubricants, fillers, and medicinal products," replied the native. "This business of collecting and marketing gum from pines has been called the naval stores' industry since the days when its products, including pitch and tar, were used largely by sailing vessels. It is said to represent at present an invested capital of more than fifty million dollars in this country. The United States, you know, produces more naval stores than any other nation—more than 75 per cent of the world's supply. It is a picturesque industry, too, with a life and, one might almost say, a language of its own."

The town was soon left behind, and the road, in some places a mere track, wound through acres of young forest. The early sunshine, barred by the dark, straight boles of the trees, was reflected by the glistening, long, green pine needles lifted so radiantly against the clear blue sky. Quail rose from the way-side grass, plump and slow of flight. Melodiously from the distance sounded the weird yodel-like hallooing of a negro chipper, responsive to the exhilaration of the morning.

A HARVEST OF TEN THOUSAND FACES

"These are part of the twelve 'crops' we're operating here," said the Southerner. "Ten thousand 'faces' to a crop, you know. Most crops are for convenience divided again into smaller units, called 'drifts.' This is the first year these trees have been turpentine, or 'chipped'; 'virgin' work we call it. There are five crops of second year, or 'yearling,' work, and only two crops of third year, or 'buck,' at this camp."

"There is a chipper;" he pointed to a distant figure moving briskly from tree to tree, cutting with a peculiar chipping tool, or "hack," a fresh wound, or "streak," on each face. "One man can chip about 10,000 streaks, or a crop, each week.

Every few weeks the cups are 'dipped,' or emptied into barrels, and the collected gum, or 'dip,' is hauled to a central still."

"These woods don't look like many tracts that I saw yesterday, as I drove along," said the Northerner. "So often trees were dead or fallen and they seemed to be cupping very small trees, too."

"We used to turpentine without any particular care,



CONSERVATIVE METHOD OF TURPENTINING

This is the fourth year of a sustained yield on a turpentine operation on the Florida National Forest near Camp Pinchot. Note the carefully preserved strip of bark between faces, the yearly face being sixteen inches high. The upper left inset shows an unproductive or "dry" face—the tree abandoned, lost by carelessness—while the upper right inset shows wasteful methods, for in one year more than thirty-one inches of face was used, the bark bar between the faces being too narrow to insure the health of the tree.

but leases and labor were cheaper then, and timber was larger and more abundant. We found that it paid to use more time and care and to plan and regulate the methods used. One or two experiments made on our own land by Government investigators helped to show us where we were losing money and how we could improve practice. Such dollar and cents arguments are convincing.

TREES WITH APRONS AND LONG FACES

"We don't cup small trees, under ten inches in diameter now unless we wish to kill them out in order to thin a stand for future careful working. Usually we don't put two faces on trees under sixteen inches in diameter. You will notice also that there are carefully maintained strips of live bark, at least four to six inches wide, be-

tween faces on all two-cup trees. Our trees seldom blow down, because we do not chip deeply and we do not allow the tins called '*gutters*' or '*aprons*,' which lead to the cups, to be driven deeply into the tree, as many do, in such a way that the proper circulation of the sap is unnecessarily cut off and at the same time the tree is mechanically weakened. We also require the use of sharp tools and insist on smooth, regular work. Then, too, you will notice that the chipping mounts the tree slowly. Less than one-half inch of wood is cut away at the weekly chipping. A face goes up only about twelve to sixteen inches in height each year.

"By this conservative work we stimulate the tree and at the same time husband its productive power. In young timber, turpented for a number of years, con-



COLLECTING THE GUM OR DIP

The mounted woods-rider supervises the work on a number of crops. On this operation the most modern, conservative methods prevail. Every few weeks the cups are "dipped" or emptied into barrels and the collected gum or "dip" is hauled to the central still. Note the young pines coming in to take the place of the old trees.

siderable amounts of new tissue, especially adapted to produce extra quantities of gum, are formed. Nature builds a highly efficient factory, from which the wise operator can receive large returns. He must not, however, cripple his plant by cutting away heavy chips of wood at each chipping. Such practice, which has been far too common, removes the best of his working machinery. In effect, it causes his factory to shut down for extensive read-



THE "BLEEDING"

A close-up view of the wound or streak on a turpentine pine. Note the exuding droplets of gum. There are a number of annual growth rings exposed by the wound.

justments at a time when, properly managed, all his machinery could be working to its fullest capacity. To secure sustained yields, only enough wood should be cut away at each chipping to open the closed gum passages and remove the dead gum-producing cells at the surface of the wound. A very thin chip will accomplish this. Narrow chipping, moreover, lengthens the time that a face can be worked profitably."

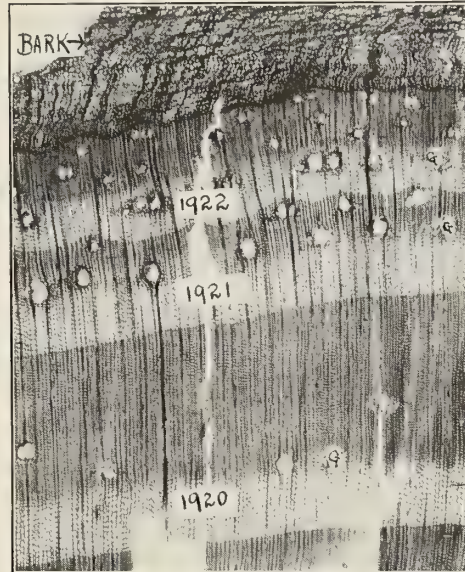
THE TURPENTINE CAMP

The two men now came in sight of the turpentine camp, and the Northerner viewed with interest the quarters of the manager, stiller, woodsmen, and other hands. The car was stopped before the office and commissary. While the Southerner transacted his business, the visitor examined the stock on the rough wooden shelves and found a variety of merchandise rivaling even that ascribed to the country cross-roads store of the North.

The Southerner led the way across the camp to the still, flanked by its storage tanks for turpentine, and its barrel-filled rosin yard. The intensely hot liquid amber of a freshly stillled charge of rosin, just drawn, was being strained through cotton batting, before it was run into

barrels. In the yard several hundred barrels of rosin were being graded. The stranger watched the inspector holding to the light his standard cubes of varying shades of amber, as he compared with them a cube of rosin cut from each barrel. The sing-song intonation of the markers fell upon his ears, as they repeated rosin grades

given, from W W, the whitest, to the dark lower grades, each nicknamed as "Frank" for "F" grade, "Nancy" for "N," and so on, to avoid confusion from similar letters. From the rosin yard his attention was drawn to the cooper shop by the syncopated drumming of the cooper beating rhythmically on the staves as he drove a hoop into place on a pine rosin barrel. Turning back



THE TREE'S RESIN FACTORY

A pine chip from the streak seen under the microscope. Gum exudes only from gum passages (G). The sap of the tree travels through the other cells and keeps the wood moist and healthy. Gum passages are more numerous in the 1922 and 1921 annual growth rings, formed after turpentine began. Many gum passages increase the yield.

to the still, the Southerner pointed out with some pride the thermometers installed, as a bit of improved practice, to help the stiller in the exercise of his judgment. "For



A TURPENTINE STILL

Flanked by its barrel-filled rosin yard, the air filled with the tang of the freshly stillled charge of rosin just drawn.



CONSERVATIVE METHODS OF EXTRACTION INSURE MANY
SUCCESSIVE CROPS

This clearly shows the splendid service of the trees in production. Where care is used, one face can be turpented profitably for many years. During the tree's "rest period" rolls of healing tissue close over the scars of the first faces while they make ready to deliver their next rich crop of gum. The upper right insets show how such faces heal over, especially in young, vigorous trees.

generations," he said, "this judgment has been developed by the passing on, as well as might be, of the experience of the father to the son. In this country this trade is often practiced for years by certain families, many of them Scotch," he added.

The two men stood together watching the stiller as he listened to the sound of his boiling mixture of gum and water and tested the progress attained by the relative proportions of spirits of turpentine and water that were coming over. Various means of saving waste and producing a clean, high-grade product were also pointed out.

On the way to their car they stopped by a freshly chipped tree to watch the gum exuding from the surface of the streak. "Drop by drop it comes," said the Southerner, as they watched the transparent globules well forth, drip into the cup, or start their slow journey down the surface of the face. "Each drop is yielded at the price of just so much life energy of the tree. The least we can do is not to waste it." He straightened the cup on its *wooden peg* to prevent the chance of the gum overflowing. "No iron nails in this timber to wreck the saws later, you notice," he said.

JUST LIKE DIGGING TREASURE

They climbed into their car and drove away, dodging piccannies, pigs, and chickens. On the way home the Southerner pointed out trees which had been turpented for eight years, were healthy, and showed rolls of healing tissue closing over the scars of the first faces. "These trees will be rested a year or two, and then worked with another face or '*back-cup*,'" he said. "Using the trees to produce gum is just like digging so much treasure. If the tree is felled without using this resource, so much forest revenue is completely

wasted. Careful turpentineing of young second-growth trees may be combined successfully with grazing and with raising timber for pulp, railroad ties, or lumber. Slash pine, for instance, shows a remarkable natural reproduction. It grows so rapidly that at fifteen or twenty years of age it is usually large enough to be turpentineed with one face. Young longleaf will also make a good growth if hogs and fire do not interfere with its early development."

As they approached town, a logging train from a side camp halted their progress at a crossing. "There is the last chapter of my story," said the Southerner, as the little wood-burning engine puffed by, dragging two tank cars of turpentine bound for the automobile manufacturers. Several box cars filled with barrels of rosin next appeared round the wooded curve. "There," said the Southerner, "go the naval stores; they are the extra profits that we are winning by harvesting these forest products from



BARRELING THE FINISHED PRODUCT

At the left is shown the modern method of barreling the rosin after careful straining through cotton batting, while at the right is seen the old method of filling the barrels by dipping by hand.

"What small cattle," said the Northerner, as the Ford chased a thin, stiff-jointed, rough-coated heifer out of the road.

"Yes, those are 'piney-woods cows,'" was the reply. "It is in their behalf that thousands of young pines are destroyed by indiscriminate fires each year. The range is free and many people who have no interest in timber own cattle."

the living trees. Here come the cars of sawlogs. See the old turpentineed faces on the butts. In the pine country of the North and the West that is where the income from the timber begins; no revenue is received until after the tree is felled and dead. This condition may change in the West, but that is a chapter from another story."

Beefsteaks and National Forests

It may seem like a cry from a juicy beefsteak or a tender lamb chop to the National Forests; but is it? The odds are just about 1 to 3 that the meat you eat comes from a steer or lamb ranged and fattened on one of Uncle Sam's great reservations, for more than one-half the sheep and nearly one-quarter of the cattle in the West graze each year on the National Forests, reports the United States Forest Service.

In California, 872,000 head of live stock, belonging to 3,370 owners, found forage during 1921 on the ranges of the 17 National Forests. This number represents 13 per cent of the beef-producing cattle and 22 per cent of the sheep in the State. In the last ten years the number of cattle and horses grazed on the California National Forests have increased over 27 per cent and the sheep over 45 per cent.

Kodaking in the Shoshone

BY WILLIAM DORY



A forest scene in the high Shoshone Mountains, where the sturdy Engelmann Spruce hug the sparkling streams and warm the valleys when winter draws its mantle of snow over the Northern Rockies.

FROM the little town of Cody, Wyoming, we crossed a wind-swept desert, ascended beside a foaming stream a cañon—deep, desolate, and imposing—out past a great dam and reservoir into a wide expanse, and finally into a high valley, with tall rocks, like ruined cities, here and Gothic pinnacles there. Above these, against the sky, stretched long, level walls of rock into which tributary gorges had cut forms resembling age-old castles and forts.

Farther upstream the high country assumed a gentler aspect, becoming green with lodge-pole pines, Engelmann spruce, and other conifers. Such was the picture as we entered the precipitous Shoshone National Forest, covering more than 2,400 square miles of mountains in western Wyoming.

What an enchanting Forest it is! The sparkling Shoshone River and its tributaries run below steep slopes that grow steeper toward the sky until one wonders how tall trees can stand firm and straight where a man must use his hands as much as

One of Our National Forests in the Rockies Rich in Game and Natural Beauty

his feet to climb. The woods are interrupted at intervals by narrow paths, where avalanches of snow have cut clean and straight from rocky rim to floor.

Each great ravine in the hillside forest seems shut off from all the world, but gives the wanderer who has climbed to some convenient ledge a long mountainous perspective, beautiful and complete within its own walls. Above the rim spreads level forest on remnants of the table-land from which the valleys were eroded.

Native wild animals still roam this forest—deer, antelope, elk, moose, bear, panther (Rocky Mountain lion), wolf, coyote, wildcat, and of course the smaller animals. Elk are so numerous that the stranger may mistake the marks on the trunks of trees where the elk have rubbed the “velvet” off their horns for trail blazes, until he observes that these marks lead anywhere or nowhere.

The winters are long and cold. In former days, when their high pastures were buried in snow too deep for the strongest hoofs to dig through, the elk and



If you have ever been in a dense Lodge-pole Pine forest after a fresh fall of snow, this picture will bring back to you a pleasant sense of clear crisp air, the sharp ring of frost crackling in tree trunks and intervals of awe-inspiring stillness.

deer, as a matter of course, came down to the sheltered lower valleys and to the plains. Now the plains are occupied by their worst enemies, mankind, and each year sees their feeding grounds more and more encroached upon by cattlemen, bringing starvation to many of them.

Of late, in the government's great game refuge, Yellowstone Park, which adjoins the Shoshone Forest, the government has had to provide emergency feeding in unusually severe winters to keep the elk alive. If, driven by hunger, they wander beyond government protection, hunters await them. Montana relaxed her game laws lately, and thousands of elk were slaughtered helpless in the snow, a senseless waste. When we were in Shoshone Forest one elk and one deer to each hunter was the legal limit, but for bear, wolf, and other predatory animals there was no protection from gun or trap. Trapping is a cruel business, for the suffering bear may drag a heavy log, by a skewer through its leg, for a week before it is found and shot.



When the first fall of October snow whitens the land, the tents of hunters appear with unexpected frequency under the shelter of friendly branches, for the Shoshone Forest is a country where elk, moose, deer, antelope, and bear still roam.



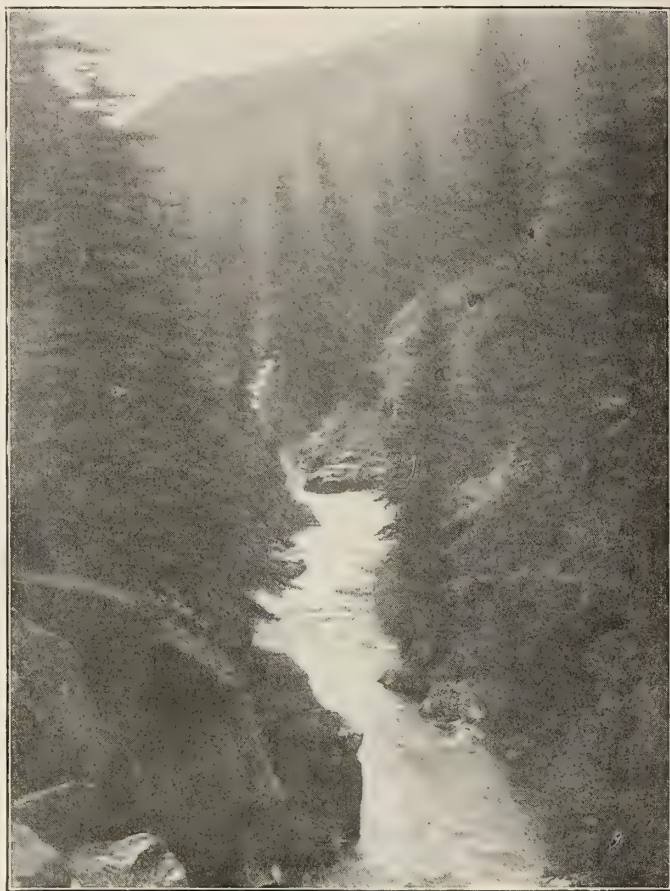
Late sunset from the heights on Shoshone Forest—all dark except sky and far-off mountain tops—the more distant trees dark ghosts, black against black on the still mountain.

Man is a hunting animal, and so, it would appear, is woman, even eager to kill a magnificent big elk in order to hang two of its teeth on her watch chain. "You are as ruthless as a cat in pursuit of a bird," said an observer. "Well," replied Diana, "in that case my sympathy is with the cat, who wants a delicate morsel for breakfast." Then she added, "I was brought up to hunt; my brothers were proud of my skill, but my husband does not quite like me for a rival, although he is an excellent shot himself."

Many persons are now finding more thrill in hunting with a camera than with a gun. Certainly all the patience is needed of which the gunner boasts. And what if the photographer should fail to secure any picture; so does the gunner often return from the hunt disappointed. In the Shoshone Forest in the evening, before a blazing fire of big logs, where people grumbled because not allowed to cut down trees indiscriminately, it was amusing to hear hunters complain bitterly that the animals fled straight to Yellowstone Park, where they knew, although there is no visible boundary line, they could not be followed.

I spent many delightful days on horseback and on foot in valleys and uplands, where I met no man, hunting with a camera. I saw the fresh prints of elk where they had lain in the grass. I lingered by breaks in the rim rocks where they pass up and down, and once my horse wheeled round, startled by a bull elk in front of him. I turned the horse forward again and the elk, head and horns proudly high, stood in the sun watching me. I aimed the camera and pulled the trigger before he trotted away, and then alas! discovered that my film-pack had dropped out. I followed elk tracks in mud after rains, and in the autumn snow, and saw

Where the sparkling Shoshone River runs between steep cliffs and makes a land of canons, desolate but imposing.

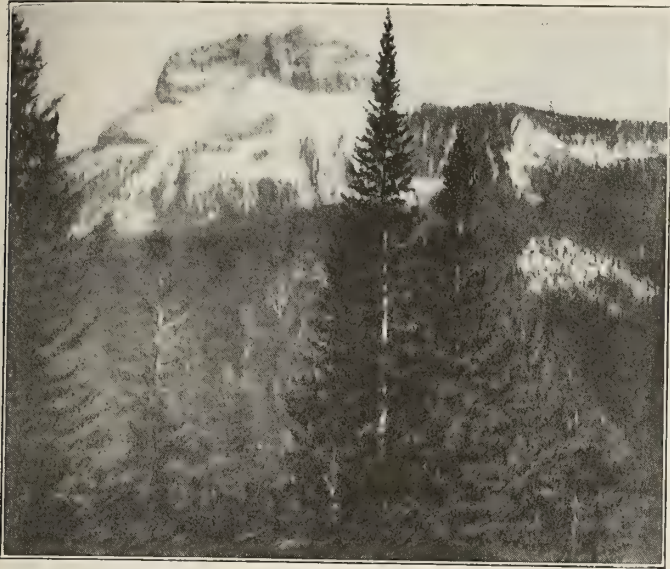


Farther upstream, the high country assumes a gentler aspect and becomes green with spruce, pine, and other conifers.



these animals themselves occasionally, but always too far away or too late in the evening. So, missing the coveted prize, there is still keen enjoyment in the alluring hope of it and in the clean mountain air and the wild seclusion of surrounding steep.

As for scenery, the camera has not soul enough to portray the effects of mountain lights that go most to the heart of the observer. The heavenly beauty of bright sunshine through a snow shower falling from a cloud above a mountain while the air is clear in the forest below becomes a dim picture in the camera. A golden sunset sky behind snowy tops, the lower mountains



A golden sunset sky behind snowy tops, the lower mountains in dark ranks of evening above the descending black forest.

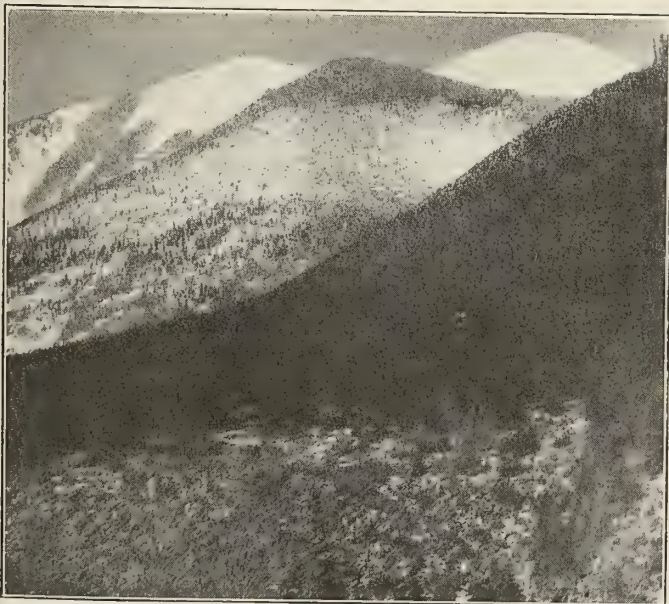
Hunting with a camera in country like this is often more thrilling than hunting with a gun—and it requires just as much patience, but the author found that the camera has not soul enough to portray the Shoshones in all their glory.

in dark ranks of evening above the descending black forest—such visions lead a photographer again and again to attempt the impossible.

The magazines concerning outdoor life give pictures of a man holding up a string of fish or standing, gun in hand, with foot upon the body of a slain animal. Frederic Remington, once cowboy, famous painter of Western scenes, remarked: "As for the slaughtered carcass, I would feel if I were he, the kodak after the Winchester adds insult to injury."



Each great ravine seems cut off from all the world, but when the wanderer climbs to some convenient ledge, there unfolds a long mountainous perspective, beautiful and complete, within its walls.



Annual Meeting of the American Forestry Association

Joint Luncheon with New York State Forestry Association Proves
Highly Interesting and Successful

THE annual meeting of the American Forestry Association was held at the Hotel Commodore, New York City, on January 17. The principal event of the day was a luncheon participated in by the American Forestry Association. Col. Henry S. Graves, the new president of the association, presided and made a stirring address in which he called upon every citizen interested in making our forests and their products render a better service in our national development to join actively in the work of the American Forestry Association.

Other speakers were Alexander MacDonald, Conservation Commissioner, of New York; Augustus S. Houghton, Chairman, Conservation Committee, Adirondack Mountain Club; Geo. W. Sisson, of the American Paper & Pulp Association; Mrs. Richard M. Chapman, President, New York City Federation of Women's Clubs, and Mrs. William White Niles, Commissioner for Girl Scouts of the Bronx.

During the course of the luncheon, Col. Wm. B. Greeley, Chairman of the Elections Committee, announced the results of the recent election of new officers of the American Forestry Association, as follows: President, Col. Henry S. Graves; Vice-Presidents; Dr. Henry S. Drinker, Filibert Roth, M. D. Alexander, Harvey N. Shepard, John W. Blodgett, John W. Weeks, D. L. Goodwillie, W. D. Tyler, Richard F. Burges, Mrs. T. G. Winter, Hermann von Schrenk, Bonnell H. Stone, Thomas H. Owen, Lou D. Sweet, Mrs. Warren G. Harding, Geo. M. Cornwall, Bolling Arthur Johnson, B. H. Snell, William Kent, A. W. Laird; Treasurer, Robert V. Fleming.

Directors to serve one year: Joseph H. Pratt, of North Carolina, and W. A. Babbitt, of Indiana. Directors to serve five years: George D. Pratt, of New York; George S. Long, of Washington, and Henry C. Campbell, of Wisconsin. Mr. Campbell's death, two weeks ago, however, created a vacancy in his position which was filled by the board by the appointment of William P. Wharton, of Massachusetts. The directorship made vacant by the election of Col. Graves as President of the Association was filled by the appointment of J. R. Swift, of Pennsylvania. The permanent appointment of Ovid M. Butler as Executive Secretary and Editor of *American Forestry* and the selection of Cecil V. Maudlin as Business Manager was approved by the board.

The New York meeting was one of the best attended which the association has held in recent years. In opening his address, Col. Graves called attention to the fact that the American Forestry Association is the oldest forest agency in the country, having been organized and in existence for more than forty years. To it he attributed a setting in motion of the forest movement in the United States, and he declared that the largest opportunity which has confronted the association during its forty-five years of activities is now at hand.

"We are entering a new era in the development, use, and conservation of our forests," he declared. "The country is facing new problems in regard to the supplies of forest products and in securing a service from forests in local industrial development. Of great significance is the fact that this is now being realized by the country, and

by the industries engaged in the production of lumber and in the manufacture of its products."

Col. Graves declared that he accepted the position of President of the Association because he believed it to be the national organization which can most effectively carry forward the forest movement.

Mr. MacDonald, who followed Col. Graves, told of the need of forest regrowth in New York, and described in an interesting manner what is being accomplished by that State. "In common with other States," he said, "New York is faced with the problem of replacing its forests. It is not a case of saving them. The time for that has gone by. We can make more intelligent use of what we have left but we must do more than that. To meet the situation adequately is going to require the intelligent co-operation of business men, farmers, municipalities, and the State government. We are cutting from our forests 350,000,000 feet annually and according to the best estimates obtainable, we are growing only 70,000,000 feet."

The speaker said he believed that New York laid the foundation for forest replacement when it inaugurated the policy of establishing State Forests, of developing a forest fire protective system and of starting forest nurseries to supply trees for planting up State lands. New York, he said, claims the largest forest nursery in the world, that at Saratoga Springs, which has a capacity of 25,000,000 trees.

Augustus S. Houghton spoke on the value of the American Forestry Association to public welfare. "Organizations such as this one, with its own publication," he said, "have an opportunity denied to others that do not have a magazine as their spokesman. The value of this organization, therefore, is dependent upon the wise use of its resources. That again is conservation. If the association is to be of value to the country it must be used, not for the benefit of private or selfish interests, but for the benefit of the public. It can do this. The association is beginning a new year. It has everything in its favor, a new president, some new directors, and a new editor for its magazine.

"In its foreword for the January issue is a promise of great things. Truly the association has a mission, tempered leadership, bringing into accord the various kindred associations so that there may be unity of action with the least amount of wasted effort and properly directing public sentiment. The magazine can and should become an instrument for the education of the people on the vital necessity of forest production and forest conservation.

"The last two issues of *American Forestry* give great promise for the accomplishment of this mission."

Mrs. Chapman, President of the New York City Federation of New York Women's Clubs, spoke briefly of the interest which the women of the United States have in the conservation of natural resources and of the influence which they can wield in bringing about legislation of the character needed. Mrs. William White Niles made a plea for the starting of forest education with the child, declaring it her belief that the most effective and lasting education in the conservation of America's forests is that which begins with the boys and girls.

A Message From Our New President

THE task of the American Forestry Association is to carry forward the movement of forestry to definite practical achievement. Its mission is to stop the devastating forest fires, to get forestry into actual practice, to restore what has been destroyed, to bring about a more economical use of forest products, and make the forest of greater service in recreation and as the home of wild life. This mission can be accomplished only by the concerted action of all of the interests of the country that are concerned directly or indirectly with the right use and development of our forests and their products.

The agency to organize these interests, to take the leadership in the development of public sentiment behind sound forestry, to stand back of the Forest Service and State foresters in their work, and to carry through the legislative and other public measures that are needed is the American Forestry Association. It is the only national organization equipped to do this work. We propose to make it a vigorous and effective agency, that will command the confidence and secure the support of the whole country.

There are three ways in which the American Forestry Association can achieve its purposes: The first is, as a great educational agency, to bring before the people of the country the facts about forests and forestry, to show the steps necessary to bring about forestry, to inform owners of woodlands about the methods of practice adapted to different conditions, to diffuse information about the utilization of forest products, to teach the importance

of forests for recreation and health, and to promote the conservation of wild life.

The second essential activity of the Association will be to organize all of the educational forces of the country in support of the forestry movement. The Association will assist existing local organizations and will reach out into

regions where there is now little interest in forestry and aid in building up new forestry associations. It will unite the efforts in forestry of various civic organizations, scientific societies, and associations of all kinds whose purpose is to advance the interests of the country. It will aim to bring into our school systems, through nature study and otherwise, the principles underlying the right use and development of forests.

The functions of the Forestry Association are not, however, confined to general educational work or to the organization of forestry activities. It has also a responsibility in forwarding public policies, both national and local. We propose to take a leadership in matters of public policy and to take a definite position in regard to various issues that may arise from time to time. The Association will stand back of wise measures that are in the interest of the

public; it will oppose with all its strength those which it believes to be unwise or wrong.

The work of the Association will be accomplished in part through its magazine and in part by the activities of its officers. AMERICAN FORESTRY is the principal instrument for the educational work of the Association. It will continue to be popular in character. There is no



**COL. HENRY S. GRAVES, NEWLY ELECTED PRESIDENT OF
THE AMERICAN FORESTRY ASSOCIATION**

Colonel Graves was formerly Chief Forester of the United States and is now Dean of the Yale Forest School.

thought, nor has there ever been any thought, of making it a technical magazine. Emphasis on this point is necessary because of the impression created by statements recently circulated that it would deal chiefly with technical matters. The magazine will, however, be informational and in a real sense educational. The aim is to develop a strong editorial policy and to make it an effective organ to forward the definite purposes of the Association. It will deal with every phase of forestry and appeal to a wide range of readers; to foresters, farmers, lumbermen, manufacturers of forest products, engineers; to students of nature and those interested in public parks and recreation, in the esthetic values of trees and forests, and in wild life.

We have the opportunity in the immediate future to take a long step forward in forestry. The American Forestry Association can be made a factor of great influence and power in working out our forest problems. I appeal to every citizen who is interested in making our forests and their products render a better service in our national development to join in this public undertaking.

The American Forestry Association is the oldest forest agency of the country. It was organized over 45 years ago. It was the chief organ of public sentiment in the early days and was largely responsible for setting in motion the American forestry movement. The association has seen the creation of a public sentiment favorable to forestry over a large part of the country, the establishment of a great system of National Forests and of National Parks, the initiation of important forestry undertakings in about 30 of our States; the building up of a profession of two or three thousand technical foresters, and the beginnings of a new movement of forestry that is commanding the interest and support of large numbers of private owners of timber land, lumbermen, and manufacturers of wood products.

We are entering a new era in the development, use, and conservation of our forests. The country is facing new problems in regard to the supplies of forest products and in securing a service from forests in local industrial development. Of great significance is the fact that this is now being realized by the country, and by the industries engaged in the production of lumber and in the manufacture of its products.

The events of the war and since the war have called attention to the urgent industrial problems that are the direct consequence of the progressive depletion of the supplies of high-grade virgin timber. I refer to the questions of securing adequate and continuous supplies of raw material for the great paper and pulp manufacturing industry of the East, the necessity to bring in construction and general utility lumber from constantly increasing distances with the resulting high cost for transportation, the freight hauls of hardwood material needed by the wood manufacturing industries, and the increasing difficulty in obtaining certain materials at prices within the reach of the average consumer. Public and private agencies are assembling authentic data regarding the present economic

situation in forestry. The results of these studies are deeply impressive. They show that our losses by unnecessary forest fires are still staggering in amount.

The amount of material used and destroyed by fire or otherwise is still far greater than what is produced by new growth. In State after State the net amount of land reduced to unproductiveness is still increasing. We are still losing ground and are still drawing on our forest capital, in spite of the vigorous efforts that are being put forth to check losses and to restore the forests.

The consequences of the depleting process are already being felt. The transportation burden reflected in the prices of forest products is an embarrassment and even a hardship to many industries and individuals. The effect of using up the timber resources is a serious injury to many communities through the closing of industries through the exhaustion of taxable resources, and the general impoverishment of whole localities.

It is clear that there must be a larger program of forestry to meet this situation, one in which the public will take the leadership and in which every owner of woodlands will participate. Soon after the war it was proposed by the National Forest Service that the Government itself should inaugurate a broad policy of forestry that would bring into co-operative effort all the forest interests of the country. This idea has made very large headway and is now widely considered as essential, though there have been differences of opinion as to the specific measures to be adopted.

There is very general agreement on the need of certain specific legislation by Congress, as a first step in the direction of a national policy of forestry. This program involves: (1) A larger program of co-operation with the States in fire protection; (2) co-operation with the States in procuring and distributing material for forest planting; (3) assistance to farmers in reforestation and in the care of their woodlands; (4) the extension of the National Forests by purchase under the authority of the Weeks law; and, (5) a program of research, much larger than at present, in forest production and in the handling of forest products.

While this program is first of all one of federal legislation it is essentially a plan to bring about action in forestry all over the country. It touches the heart of the problem which is the necessity for concerted action by the Government, by the States, and by every private interest directly or indirectly concerned with forests or their products.

There is no single formula that will solve our forestry problem. Legislation is required by the Government and by all the States, in extending the public forests, in organized fire protection, in reforms in taxation, and the like. But the ultimate aim is in all cases the practice of forestry in the woods and a better handling of forest products.

I have accepted the position of President of the American Forestry Association because I believe that this is the national organization that can most effectively carry forward this movement.

The Australian Bush

BY HARRY D. TIEMANN

Late Adviser to Victorian Forest Commission

WHAT kind of a mental picture does the word Australia bring to mind? Vast treeless plains, with kangaroos hopping about and scattered tribes of savage blacks, or magnificent forests of great trees, with deep, shady dells and high, rocky mountain peaks?

As a matter of fact, Australia has some of both, but it is the forested zones which are the most thickly populated and where all the large cities are located. Little has been published in America concerning the forested and the civilized portions of this great continent. A Chicago editor, of good standing, wrote to me and wanted to know what I, as a forester, found to do in *treeless* Australia! I answered him with a photograph similar to the illustration on this page.

THE REAL BUSHMAN

Probably less is known by the people of the United States about the forest physiography of Australia than of any other civilized country in the world. Much has been written, however, about the aboriginal cannibals, wrongly called "bushmen," in this country. In Australia the term "bushman" is equivalent to our "lumberjack," and he would hardly feel complimented to be classed as a cannibal! The natives are referred to as "the blacks" or as the aborigines, in more formal parlance. A good deal has been said about the curious kinds of native animals, so different from those in other parts of the world, and of the fabulous size of the eucalyptus trees, but little has appeared describing the ordinary, every-day forests of this far-away country.

ONLY 5 PER CENT FORESTED

The area of Australia (including Tasmania) is almost exactly the same as that of the United States, excluding

Alaska and the insular possessions—2,974,581 square miles. A little over one-third of this is practically desert, with less than 10 inches annual rainfall, and this lies outside the tropics. Of the remainder about half is tropical, leaving about one-third of the entire area fertile and extra-tropical. A large portion of this third is prairie land, suitable for sheep, cattle, and grain. If you will

glance at the map you will note that all the large centers of population—Brisbane, Sydney, Melbourne, Adelaide, and Perth, as also Hobart and Launceston, in Tasmania—are seaports or near ports. The most habitable part of the continent lies in a zone roughly varying from 50 to 200 miles in width, extending along the seashore.

The well-forested area coincides closely with this coastal zone, including the whole of Tasmania. Compared to the total land area, Australia has less than 5 per cent of forested land, and according to Mr. Lane-Poole, former Conservator of Forests of Western Australia, less than 2 per cent of merchantable timber. Of course, scrub and mallee growth cover a much greater area, extending to the borders of the "Nullarbor" Plain, as the barren central desert is deferentially called.

THE HOME OF THE EUCALYPTUS

The predominant tree of Australia is the eucalyptus, of which two hundred and

eighty-three species are described. Next in number of species comes the Wattles or Acacias, of which there are at least two hundred and fifty, but only a very few are of importance commercially. While these two genera are common throughout the continent and may be said to be characteristic of the Australian forest, there are a great many other native species of prime importance for lumber. The forests as a whole, however, are very deficient in softwoods, and consequently plantations are



SPLENDID KARRI IN WESTERN AUSTRALIA

These trees vie in size with the Mountain Ash of Victoria. A man at the base of the middle tree is holding a handkerchief above his head, giving a comparative idea of the fine size of the trees.



GIANT TREE-FERN

A forest of tree-ferns and eucalypts. The writer is standing between Forest Commissioners MacKay and Code, with his hand on the trunk of the giant fern.

almost exclusively conifers. The order of the Coniferales is represented by eleven indigenous genera. The little island of Tasmania has several excellent conifers, but they occur only in small scattered groups. They are the Huon Pine (*Dacrydium franklinii*), Celery Top Pine (*Phyllocladus rhomboidalis*), and King William Pine (*Athrotaxis selaginoides*). On the main land, chiefly in the northeastern tropical portions, are three splendid conifers, but likewise scarce, the Araucarias, "Bunya" Pine and Hoop Pine (*A. bidwillii* and *A. cunninghamii*); and the Queensland Kauri (*Dammara robusta*). These trees occur along the northeastern coast, mostly in Queensland. Scattered throughout the interior drier regions, and often forming considerable forests in pure stands, is a class of trees much resembling our Monterey Cypress, but generally smaller and slow of growth. There are about fourteen native species, all of the genus *Callitris*. The wood is rather hard, somewhat like Yew, and the timber is small and knotty. It is used only locally.

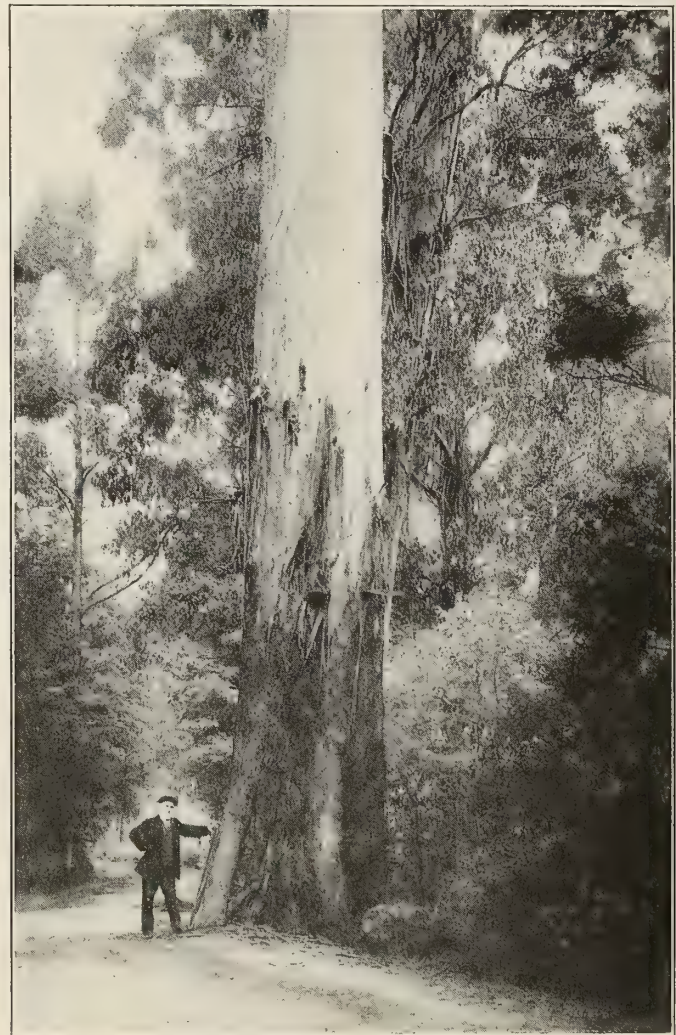
CONIFERS WITH BROAD LEAVES

Curiously enough, many of these Australian conifers have broad leaves. The Kauri Pine has a smooth, thick leaf, somewhat the size and shape of our Mountain

Laurel, and the Celery Top Pine has a featherlike leaf much the shape of celery, as its name signifies. It is interesting to note in this connection that the Tanekaha of New Zealand (*Phyllocladus trichomanoides*) not only has a broad leaf, but it is actually a compound leaf. This is getting very far from our popular conception of conifers with "needle-like leaves."

It is possible to give only a very superficial discussion of the Australian forests as a whole in a brief article. The almost universal prevalence of the two principal genera, the Eucalyptus and Acacia, give a certain degree of uniformity to different types, which is kept from becoming monotonous, however, by the many auxiliary species and by an immense variety of other plants and flowers. The State of Victoria contains some of the finest of the Australian bush and is at present relatively the best forested State.

The forests of the country vary greatly in different regions. The western and eastern forests are quite distinct, and northern tropical forests are very different from those in the temperate regions. So also the character of the drier interior regions differs greatly from that of the coastal belt. They are nearly all alike in one



TWO STRONG CHARACTERS

An Australian pioneer, Mr. J. W. Lindt, and a large Mountain Ash, on Black's Spur, in Victoria. These splendid trees, with smooth, whitish bark in the tops, add great dignity to the native forest.

respect, that the predominant trees are species of *Eucalyptus* and *Acacia*. Bordering on the drier interior, however, are regions entirely devoid of *Eucalyptus*, the trees being largely species of *Callitris* (Cypress Pines) and *Casuarinas* (She or Bull oaks) and dwarf varieties of *Acacia*.

THE WONDER FERNS OF THE VICTORIAN BUSH

A most striking character of these forests is the undergrowth of Fern trees. They form by all odds the most exquisite feature of the native bush and something over which a stranger is sure to fall in rapture. No words can exaggerate the beauty of these wonderful relics of past geologic ages. All through the tall poles of the *Eucalyptus*, on the hillsides, but more especially along the gullies, are seen the brilliant green crowns of these wonder ferns, sometimes 25 feet in diameter and of perfect form, contrasting in color with the somber sage green of the *Eucalyptus* and *Acacias*. They are frequently 15 to 25 feet high and sometimes 40 or 50 feet, and of great age, often several hundred years old! Indeed, it would appear that they are of the same age as the giant trees of which they form an undergrowth. There are two kinds, the taller (*Alsophila australis*) growing on the hillsides and the one with largest crown (*Dicksonia antarctica*) growing in the damp gullies.



"ALICE IN WONDERLAND"

Only this time it is an all-too-real wonderland—this forest undergrowth of beautiful fern trees. No words can exaggerate the beauty of these wonderful relics of a past geologic age, with their brilliant green-crowns, sometimes twenty-five feet in diameter.

In addition to the ferns, there are many other shrubby plants forming an undergrowth to the tall timber. Such shrubs as "Sassafras," "Hazel," "Musk," "Dogwood," "Satin Box," and "Laurel" might lead one to suppose that he were among familiar plants, until he examined them and discovered that they bear no botanical connection with plants of these names in the Northern Hemisphere. The trees also bear familiar European names, but beyond the names and certain fancied or real resemblances of the wood there is no relation to the northern prototypes. For example, "Mountain Ash" and "Tasmanian Oak" are *Eucalypts*, "Hickory" and "Willow" are *Acacias* or *Wattles*, "Maple" is a *Flindersia*, "Walnut" is a *Cryptocarya*, "She Oak" is a *Casuarina*. Then there are the so-called Native Cherry, Native Pear, "Silky Oak," "Honeysuckle," and others. There is one tree, the "Beech," which is quite closely allied to our own *fagus*. Curiously enough, all the native trees and shrubs of Australia are evergreens—that is to say, they are not deciduous, even those resembling our own to a certain extent, with thin, broad leaves.

AUSTRALIA'S LARGEST TREES

The composition of the bush varies greatly, according to location. The Mountain Ash (*Eucalyptus regnans*), Messmate (*E. obliqua*), and Woolly Butt (*E. delegatensis*) are



"GRASS TREES" IN THE VICTORIAN BUSH

This peculiar Australian plant has a stout, trunklike stem bearing a tuft of long, grasslike wiry foliage and a tall flower stalk with a dense spike of small flowers. It abounds in resin known as blackboy gum or acariod gum.

probably the most abundant and important trees of the Victorian bush. They do not grow in clear stands, but in mixture with many other Eucalypts, Wattles, and Beech. The Mountain Ash is probably the largest tree in Australia. While it grows to great heights, as do most of the Eucalypts, it seldom exceeds 300 feet in height and does not compare with our redwoods or with the New Zealand Kauri in diameter.

Much has been written on the immense size of the Australian Eucalypts, but it seems probable that early accounts have been greatly exaggerated. At the Melbourne Exposition an effort was made to locate the largest living trees by offering prizes for authentic accounts. The largest found was a Mountain Ash in Gippsland 326 feet high. Subsequently one was found 347 feet, in the Dandenong Mountains.

The trees of the native bush are very straight, with round trunks as soon as the buttressed root swelling is past, and with remarkable clear lengths, the first large limbs often being 100 to 150 feet or more above the ground. These splendid trees, with the long stringy bark hanging from half way up the trunk and with smooth, whitish bark in the tops, give a cathedral-like dignity to the forest. The foliage is very open and allows considerable sunlight to filter through to the tree-ferns and other shrubbery far below.

FORESTS OF UNIQUE COLORS

The color of the Australian bush is quite different from that of our woods. Except for the gullies, the impression is a bluish green shading to orange-olive. In the spring and early summer the young twigs become a beautiful reddish purple to crimson or brownish orange, which is often very brilliant in the bright sunlight. The effect is unique and beautiful and the young shoots are much used for decorative purposes. All of the colors are soft and harmonious rather than bright. Contrasting with the rather somber colorings of the trees are the bright greens of the ferns and the shrubs in the shady gullies, without which the bush would become decidedly monotonous.

Growing in the damper portions of the bush and in the gullies are two species of great importance on account of the quality of their lumber—the Blackwood (*Acacia melanoxylon*) and the Beech or Myrtle (*Nothofagus cunninghamii*). Both have dark-green foliage. That of the Blackwood is familiar to Californians, where many varieties are used for ornamental and street trees. It is one of the best and most beautiful cabinet woods in the world. The trees, however, never over plentiful,

are becoming quite scarce. The foliage of the Beech is exceedingly beautiful, with its very small, alternate, holly-like leaves arranged flatly and thickly on the stems. The Forest Commission has adopted a sprig of this Beech as its insignia.

The Mountain Ash is not only a splendid furniture wood, when properly dried, but it is used for all parts of buildings—scantlings, flooring, siding, weather-boarding, ceiling, and even shingles. Woolly Butt, which grows at higher elevations, usually from 2,000 to 4,000 feet, is an equally good timber for general purposes and closely resembles our Chestnut wood.

THE OLD STORY OF RING-BARKING AND FIRE

Fire is the bane of Australian forestry, even to a greater extent than in this country. Popular sentiment has heretofore been largely lacking, particularly among the settlers and cattlemen. Enormous tracts have been laid waste by "improving" the land



THE STRAIGHT STEMS OF VICTORIAN
"MOUNTAIN ASH"

A great utility wood, the Mountain Ash is not only good for furniture, but is widely used in building construction and even for shingles.

with ringbarking and fire. It is the old story of the conflict between the pioneer and the forest. It is his enemy; the easiest way, and indeed often the only reasonably practical way from his standpoint, to clear the land and obtain grazing for his cattle is to ringbark and burn, and little does he care, as a rule, whether or not the fire stops at his boundary line or escapes onto Crown land.

A good average stand of millable timber runs 30 to 50 thousand feet per acre. Of course, where there are many of the old large trees, it may run much more than this; but trees over 5 or 6 feet in diameter are much too difficult to handle to be attractive to the lumberman.

The Land Beyond Kona

A Little Journey to Mount Mitchell, the Highest of the Appalachians

By E. E. MILLER

THE mountains look on Kona and Kona looks on Toe River.

The mountains that look on Kona are not very impressive mountains. One comes to the place over the very roof of eastern America, winding high among the great hills and seeing still above him the 6,000-foot peaks of the Black Mountains, or reaches it through the narrow gorge of the Nolachucky, where the Great Smokies, gray, rock-bastioned, scantily wooded, rise straight up from the river's brink to shoulder out the sky and awe with their rugged majesty. At Kona the lower ridges come close and one misses the great sweep of the mightier mountains.

Nor is Kona much to look on. The front of the little railroad station rests on the cliff; the rear is supported by poles that stand at the river's edge. The track for the main line of road has been blasted out of the rock; the branch line begins with an ancient-looking bridge over the river. Above the railroad, in a single building, are the post-office, the store, and the restaurant. An old, vacant building, held out of the river by pole supports, faces the business center from across the railroad. That is Kona.

Toe River is worth looking on. It was the Estatoe to the Indians. A rude and unpoetic race has cut the music out of the name and reduced it to its present absurdity; but the river is still beautiful. It is a shallow, clear-

flowing stream, winding among polished stones and over sands all aglitter with mica, and singing to itself as it runs. The traveler who must wait an hour or two in Kona until the train on the branch line gets ready to run can do no better than to look and listen to the shimmering, murmuring Estatoe.

NO ESCAPE FROM THE MOUNTAINS

The train will start in due time. One need only wait, being as patient as he can, both before it starts and after. It is a freight train, with one coach on the rear for passengers, and it follows the South Toe, climbing steadily. Across the stream and just a little back from the railroad track the hills go up, wooded or grass-covered, or planted to little patches of corn, while every now and then the windings of the road reveal the great sweep of the Green Mountains, which the train is approaching, or the massive bulk of the Black Mountains, from which it seems vainly trying to get away. One cannot escape the mountains here—a towering blue wall yonder, a suddenly uplifted peak close by, far away a haze-dimmed summit glimpsed for one thrilling moment between earth and sky; it is to these his eyes turn; it is their memory he will carry in his heart for many days to come.

When the road leaves the flower-bordered stream to cross the green fields of the uplands to the town of Burns-



THE SIDES OF MOUNT MITCHELL ARE NOT RUGGED. THESE HIGHEST OF OUR EASTERN MOUNTAINS ARE WELL COVERED WITH SOIL, AND TALL FORESTS GREW ON THEM. THE FORESTS HAVE MOSTLY BEEN CUT NOW, AND FIRE HAS FOLLOWED LUMBERING IN MANY CASES. ON THE LOWER SLOPES HARDWOODS GROW ALONG WITH SCATTERED HEMLOCKS AND SPRUCES

ville, the hills lift themselves all about, the higher mountains looking down on the little town and its little hills with a protecting air. They look down, too, on the statue of the valiant Ottway Burns, for whom the town was named, and so looking they should ever smile. Ottway Burns—he was a captain or admiral or something in the War of 1812—was no doubt a man to be honored, but this statue of him is the funniest on record. The most dyspeptic old cormudgeon can safely eat just as many as he desires of the flaky hot biscuits the town hotel serves and have no fear of indigestion if he will only go out after breakfast and gaze for a few minutes on the hero's cherubic face, drawn sword, and comically nautical headgear.

THE OLD STORY OF BOOM LUMBERING TOWNS

Burnsville is a "little old farming town," but Pensacola and Murchison and Escota are, or have been, boom-built lumbering towns. They lie in the fertile little valley of Cane River and a railroad runs to them from Burnsville—that is, it runs as far as Murchison. The rails have been torn up beyond there and only a few houses are left where the mills once ran and the electric lights blazed and several hundred men worked in the

town that was Escota. Corn is growing over most of it now.

It is the old story of the lumber camps. The lumbermen come in, put up great mills, build railroads, cut off the timber, then go their way, and the brief activity and prosperity of their day are things of the past. An old story and a sordid one, a story of exploitation and not of development.

Murchison, fearful that its time will come, still lives, and at Murchison lives 'Dolph Wilson, hotel-keeper, guide, trapper, bear-hunter, and lover of the hills. It was from his place I started to climb Mount Mitchell. He is supposed to live at the foot of the mountain, but one can follow the old railroad bed up Cane River for five miles before he turns to real climbing. All the time, however, he is going up, and the big ridges that hide the King of the Appalachians from him are but folds of the monarch's garments that trail down into the lowlands. Real climbing begins at an elevation of about 3,000 feet, and from there to the top, 3,700 feet higher, is continuous.

This upland country is a land of musical waters. Not one of its many streams is silent. From the little rivers that plunge and



LOOKING DOWN WEST FROM MOUNT MITCHELL. THE HIGH POINT TO THE RIGHT IS YEATES' KNOB. "ONE CANNOT ESCAPE THE MOUNTAINS HERE—A TOWERING BLUE WALL YONDER, A SUDDENLY UPLIFTED PEAK CLOSE BY, FAR AWAY A HAZE-DIMMED SUMMIT GLIMPSED FOR ONE THRILLING MOMENT BETWEEN EARTH AND SKY"



LOOKING DOWN GRAYBEARD MOUNTAIN FROM THE PINNACLE. THE MOUNT MITCHELL MOTOR ROAD CAN BE PLAINLY SEEN. "A VIEW . . . LOOKING DOWN A THOUSAND FEET INTO THE THICK-GROWN RAVINE"



LOOKING NORTH FROM MOUNT MITCHELL. GRANDFATHER MOUNTAIN IN THE MIDDLE DISTANCE. "IT IS A VIEW TO THRILL, TO INSPIRE, TO HUMBLE"

splash over their gleaming cliffs to the tiny spring branches that run almost hidden under shadowing clumps of rhododendron, every stream is singing constantly. One often hears them before he can see them. Cane River becomes more vocal as well as more beautiful as one follows its upward course. Great boulders lie in its bed, and the hemlocks grow beside it, and rhododendron, and lilac-hued queen of the meadow, and gleaming cardinal flower. The flowers become fewer deeper in the hills, but the rocks, which break the river's flow and are broken by it, become more numerous and make of it a succession of deep, dark pools and foaming, flashing rapids. Far up its course are the Blue Sea Falls, bits of perfect beauty, where the river pours down with ceaseless spray and the shining whiteness of perpetual foam.

MOUNT MITCHELL SCARRED BY AX AND FIRE

The sides of Mount Mitchell are not rugged. These highest of our eastern mountains are well covered with soil, and tall forests grew on them. The forests have mostly been cut now, and fire has followed the lumbermen in many cases, so that vast tracts are but a desolation. Two railroad tracks we crossed in our journey to the top, and on the neighboring mountains the long road-scars wound in and out of the small timber yet

standing for miles and miles. On the lower slopes of these mountains hardwoods grow along with scattered hemlocks and spruces. Above the hardwoods comes the spruce belt, and higher still the dark ranks of the balsams.

The State of North Carolina holds the top of the mountain as a park, and here the forest has been protected. We were in the balsams now, and while going is not exactly of the best in a balsam wood, it felt like a breath of new freedom to be able to look about as one chose. On old fallen logs the young balsams were starting their growth—a process that has been going on for centuries. The roots of the old trees stand up in the air and there are deep holes under

and about them. With the young balsams the bracken grows, and underneath this tangle is a soil-carpet of moss and oxalis. One walks through the balsam woods with the feeling that he is in the presence of many silent centuries.

I climbed the tower on the mountain top and watched the sun go down behind a bank of black clouds. Looking to the four quarters, I saw mighty peaks rising all about me—Clingman, Black Brothers, Pisgah, and the rest. It is a view to thrill, to inspire, and to humble.

August as it was, the wind came sharp and cool and



LOOKING DOWN EAST FROM MOUNT MITCHELL. TABLE ROCK AT THE EXTREME LEFT, MIDDLE DISTANCE. "ONE WALKS THROUGH THE BALSAM WOODS WITH THE FEELING THAT HE IS IN THE PRESENCE OF MANY SILENT CENTURIES"

I went down to the warden's house. It is a three-room cabin built under and against an overhanging rock. Only one room is used for living purposes. In it we had supper and in it we went to bed—seven grown men of us. It rained in the night and next morning the mist hung over everything. My companion and I had to leave the mountain top, however, and down we went, following another trail through the wet bushes.

A LONE SURVIVOR OF A ONCE GREAT COMPANY

Two things make this trail notable: One is a view from a narrow ridge where, looking upward two thousand feet to the summits and down a thousand into the thick-grown ravine of a mountain stream, I got an impression of strength and majesty scarce exceeded by the wonderful

year, even when the first cutters have thought them exhausted. But there can be no yields for possibly a hundred years from the burned-over acres now grown up to fire cherry. Some foresters doubt if even two or three centuries will see any adequate restoration if Nature is left to work alone. Looking out over these burned areas, it came to me as never before how short-sighted and unprofitable and self-destructive "business" can be. The soil of this section has been robbed, and its people and the future for generations, that a few men might make big profits for a little while.

THE TASK OF REDEEMING WASTED AREAS

One of the seven men who slept in the warden's cabin that night was a caretaker on one of the new Na-



"ABOVE THE HARDWOODS COMES THE SPRUCE BELT, AND HIGHER STILL THE DARK RANKS OF THE BALSAMS." THIS IS MOUNT MITCHELL, SEEN FROM BLACK BROTHERS. THE GOVERNMENT OBSERVATORY TOWER CAN JUST BE SEEN ON TOP OF THE MOUNTAIN. THE CENTRAL POINT IN THE MOUNTAIN GROUP AT THE RIGHT IS CHINAMAN'S PEAK, 6,611 FEET HIGH

stretch of the heights I saw from the mountain's top. The other is the "Big Poplar"—a lone survivor on these slopes of a once great company. Thirty-three feet in circumference as high as a man can reach, it rises like a colossal pillar above the trees about it. Hollow, of course, and valueless for lumber, else it would long since have gone to one of the big mills that held sway in the valley below. Into its hollow, the story goes, four men crept to play cards one winter day. They built a fire and left it burning. It caught the tree and burned for some days before it was put out, further weakening the walls, already none too strong. Before many years the big poplar, doubtless a tall tree when the first white man crossed these mountains, will be but a memory, its end hastened by the carelessness of men who knew enough to play cards, but not enough to respect the lonely giant left from early years.

Timber grows to be used, of course; but use is one thing and destruction is another. The forests of this section have been in great measure destroyed. Given but half a chance, the woodlands go on yielding year after

tional Forests in the vicinity. The Government owns considerable land in this section and is trying to protect it from fire, but the amount purchased is but a start at what should be bought, and only the first steps toward real protection have been taken. The Nation and the States have yet to realize just how much they need to do to save the remaining forests of the mountain sections and to redeem the wasted areas, and the people of this region have yet to realize just what the forests mean to them.

Any system of agriculture or industry which does not make the preservation of the forests one of its chief considerations is an inadequate system for the hill country. So is any program of social advance for the mountain people a faulty program which does not take into consideration the mountains themselves and the trees that grow on them.

About the people of these mountains much nonsense is talked and written. The conditions usually ascribed to the section—poverty, illiteracy, stubborn clinging to old customs and manners of thought—still persist. The

mountain cabin still exists; so does the mountain moon-shiner; so do squirrel rifles and homespun clothing and primitive methods of living. But none of these is the rule any more. They are the exceptions, and the whole region is misrepresented when its most extreme conditions and practices are pictured as the general run of things.

SHADOWS THAT TOUCH THE PAST

There are old-time log cabins, with clay chinking and stone chimneys, in the country that lies in the shadow of our highest Appalachians. Some of them are empty, deserted; some still lived in. Along with them, and

and modes of speech which might well be preserved, but the spirit of these North Carolina hills is the modern spirit.

The agriculture of the section is not primitive. The soil is fertile, and the farming system, based on grass and cattle, is a sound system. The farmers are practically a self-supporting lot, and they came through the recent agricultural depression in much better shape than did the run of farmers the country over. Gullies and poor fields are few. The land is green and prosperous-looking.

Still, with the very limited amount of tillable land in



CAMPING ALONG THE MOTOR ROAD TO MOUNT MITCHELL. THIS IS APPARENTLY ONE OF THOSE PARTIES WHO ARE STAYING OVER NIGHT FOR THE PURPOSE OF ENJOYING THE SUNSET AND SUNRISE IN THE INCOMPARABLE "LAND OF THE SKY"

more numerous than they, are farm-houses of modern construction with paint on them. I saw barefoot women on this trip and shy little mountain girls growing up into the delicate, short-lived freshness and with the high-pitched nasal voice of the typical hill woman; but I did not see any linsey-woolsey, or hear any spinning wheels, or run across any of the terrible dialect still attributed to the folks of the hill country.

This highland county has scattered its schools into every populated corner, so that no child need grow up without an education. The manners and the customs of most of its people are not very different from what one would find in any fairly prosperous farming section. Picturesque types there are, and some unique customs

the region and the comparatively thick population, new methods of farming must gradually be worked out, if the people are to make a good living. Small fields of corn and wheat and large fields of grass cannot support any large number of people to the square mile. This county has a population of over 15,000 and an area of 298 square miles. The largest town is but a village. The lumber industry, as a big commercial proposition, is practically a thing of the past. The mica and spar mines are worked on a small scale and give regular employment to only a few people. It is essentially an agricultural county and must live on the products of the soil.

[Continued on Page 104]



The One-Way Motor Road to

GETTING back to nature by way of a one-way motor road is the unique experience of visitors to the summit of Mount Mitchell, the highest peak east of the Rockies.

Mount Mitchell is known as "the top of Eastern America" and as a result of the new motor highway it is gaining new vogue with the tourists who yearly flock to the mountains of western North Carolina. In the heart of the world-famed Blue Ridge of the Alleghenies, its altitude of 6,711 feet gives it pre-eminence among the lofty peaks of that section of the country.

The new road and its one-way traffic compelled the admiration of more than 25,000 visitors during its first season of operation in the summer and autumn of 1922. An eighteen-mile stretch of smooth highway, with traffic moving in a single direction, is of itself enough to attract attention. When this highway reaches the pinnacle of half a continent, and carries the motorist over a well-built road of even surface and railway grade, through marvelous panoramas of scenic beauty, the visitor finds reason for wonder and amazement at every turn.

Mount Mitchell is an old friend of the western North Carolina tourist. In the past the visit to the summit was limited to those who were willing to spend a day in making the ascent, two nights and a day in camp at the

top, and a third day in the downward journey. By November 1922 the sole exception to this custom was during a few recent years when the peak was accessible by a logging railroad which handled tourist traffic as a by-product of its timber operations.

With the passing of the lumbering activities the railroad was abandoned, and tourists were again left to the choice of hiking or horseback travel. It was then that the motor road was brought into existence by the utilization of the roadbed and bridges of the dismantled railroad. The fundamentals of a motor highway were ready at hand. As far as grade was concerned the conditions were probably better than they would have been if the highway had been built anew. Steam railway operating requirements had called for easy grades, and the motorist now receives the benefit of these through a maximum grade of 6 per cent and an average close to $3\frac{1}{2}$ per cent. Such gradual climbing is unusual in mountain highways, even in these days of advanced road building.

Operation of this unique highway called for special methods in the handling of the traffic. Based on the roadbed of a railway, the thoroughfare was necessarily limited as to width. Because of the topography, it was subject to sharp turns where points ahead would be hidden from the view of motor drivers. On the railroad these turns



The Summit of Mount Mitchell

McLOUD had been "switchbacks," for the good reason that the steep mountainsides afforded no room for sweeping turns. On the new highway they became hair-pin turns or loops. To guard against danger at these points, and to prevent the risks involved in meeting vehicles moving in the opposite direction, the system of one-way traffic was devised.

Through the operation of this system the motorist begins the long ascent in the full and comforting knowledge that he will meet nobody traveling downward. He knows that his sole problem of safety is to drive his car with due regard to the sharp turns, with no worry as to the sudden appearance of some reckless motorist coming against him. With this assurance he is able to make the eighteen-mile trip at a rate of speed which is well within the bounds of caution, and which would not be possible with opposing traffic. As a result of this system, the motor party may leave Asheville at ten o'clock and have luncheon at the summit, thirty-six miles distant. A factor in the time of the journey is that the highway is closed to horse-drawn vehicles, with their attendant influence in slowing down the stream of traffic.

This one-way traffic is achieved by regulations strictly enforced by the owners of the road. Each end of the highway is guarded by a gate. Ascending cars are

allowed to enter at the lower terminus between the hours of eight o'clock in the morning and one o'clock in the afternoon. After one o'clock the lower gate is closed. At that hour a special guard starts for the upper end of the road, as a safety patrol, in a car known as "the trailer." The object of this patrol is to see that the road is clear after the morning traffic, and that no disabled cars are stranded by the roadside. If a derelict is encountered the man in charge of the trailer gives first aid in the way of repairs, or tows the disabled car to a place in which it will not interfere with the downward traffic of the afternoon.

For the upward trip of the trailer there is an allowance of two and a half hours, which affords time for the handling of ordinary emergencies. Under the rules the gates at the upper terminus cannot be opened for downward travel until the trailer arrives and reports that all is clear.

Mount Mitchell is a part of the North Carolina State forest and is at the borders of the Pisgah National Forest. The motor highway passes through a portion of the National Forest and enables the tourist to see some of the beneficial results already achieved by the United States Forest Service in the handling of this comparatively new section of the national domain.



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BY NORMAN C. McLOUD

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Two Forest Rangers, the Falcon and the Jay

BY EDWARD HOWE FORBUSH

A BIRD so beautiful as the Blue Jay must be very rare now in your country," said a titled Englishman to a friend of mine sojourning for a time at the seat of the British Empire. Had his lordship lived in New England he would have known that this bird of beauty is not only common but commonly execrated. Probably every opprobrious epithet that was ever applied to a bird has been hurled at the Jay. Murderer, pirate, cannibal, robber, thief, kleptomaniac, rioter, tippler, rascal, disturber-of-the-peace—these are some of the vituperative appellations that have been applied to him, not only verbally, but in print. Minot says that "in the slaughter of babes (meaning birdlings) the Jay out-Herods Herod," and that in the stealing of grain he rivals the Crow.

I have never known a Jay to occupy the nest of another bird, but he has been known to tear down nests and to eat the eggs and young of Robins and other small birds. He occasionally dines off the brains of nestlings and he steals the farmer's corn. More evil than this may be alleged against him,

for he has even been known to kill small chickens and young pheasants and to chase with apparent deadly intent full-grown song-birds.

He is a born thief. He steals from his own kind. A correspondent writes me that he saw a Jay busily engaged in hiding corn in a crevice. When the feathered miser had finished his task and sought fresh fields, another Jay, which had been hiding in a near-by tree and watching the operation, quietly sneaked up, uncovered the hoard, and hid it in another place. Possibly Jays may steal one another's eggs, as I have found their eggshells

on the ground pierced in exactly the same manner as Robins' eggs when stolen and sucked by Jays. It may be that the Robins themselves take revenge upon the Jays, as I have frequently seen the former driven away from nests of the latter by the exasperated vituperating owners; but both Robin and Jay unite their forces in defending their nests from their common enemy, the squirrel. The Blue Jay seems to have a crow-like mania for stealing and hiding bright-colored objects, so that it is unsafe to leave small articles of jewelry where he can get them.

In autumn Jays seem to delight in gathering early in the morning in small flocks near some woodland dwelling and "yawping" in raucous chorus, seemingly at nothing but the empty air, and waking everybody in the neighborhood.

The very name of the Jay is anathema to the hunter, for that profane racket, its alarm note, warns every shy creature in the woods. The bear hears it and sneaks away. The deer is instantly on the watch. Many hunters, aware of this, take their revenge by shooting every Jay that



(Photograph by E. H. Forbush.)

A BLUE JAY ENTERING HER NEST, UNDOUBTEDLY BACK FROM A MARAUDING TRIP. THE TAIL POINTS TO THE DIRECTION FROM WHICH THE BIRD CAME THROUGH THE BRANCHES

comes within range of their vision.

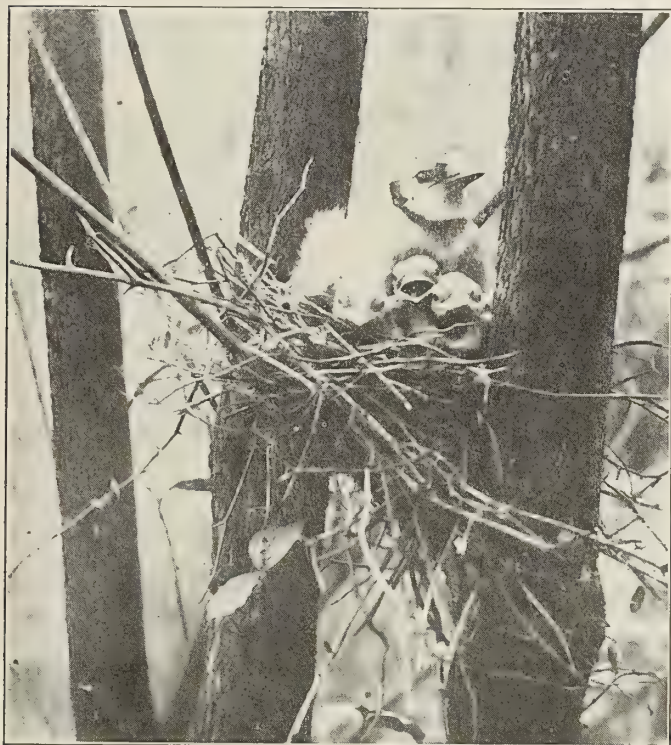
Some budding poet has immortalized the nest-robbing proclivities of the Jay in the following lines:

With twigs and strings and various things,
The Robin builded it strong;
And as he plaited them into shape
He caroled a cheerful song.
"Why so busy?" the Jay bird asked;
"What are you doing, pray?"
"I suppose," said the Robin, "I'm building a nest
For you, you blooming Jay!"

The Blue Jay's tipping habits are mainly confined to the Sunny South. "Naw, sir," said a southern stable

boy; "I run him down. He's drunk on mad-berries. I didn't shoot him." The Jay's head wagged ridiculously in the effort to hold it up. In Florida the Jay, like the Robin, indulges too freely in the intoxicating fruit of the "pride of China," while in the north the bird is sometimes captured through its fondness for corn soaked in whisky.

Admitting all these faults, the fellow is an amusing,



(Photograph by Wilbur F. Smith.)

A BLUE JAY BROODING HER YOUNG. NOTE THE SMILE ON THE FACE OF THE MIDDLE YOUNGSTER

entertaining rascal and also useful as a tree-planter and an insect-destroyer. And then his beauty pleads for him. How few birds are as blue! Not one in the British Isles and only a few in North America. Were the Jay swept out of existence, how his flashing blue, black, and white would be missed from the yellow maples and birches in our October woods. How the still, white void of winter is enlivened by the "steel-cold scream" of the Jay. As Thoreau says, "It is like a flourish of trumpets to the winter sky."

Where the Jay is hunted his shyness is proverbial, but wherever he is welcomed and fed he stays the year round, makes himself entirely at home, and seems to know that he "belongs." James Whitcomb Riley describes his effrontery when he says:

"Mr. Blue Jay, full o' sass
In them base-ball clothes of his,
Sportin' round the orchard jes'
Like he owned the premises."

Every outdoor person in New England knows well the harsh cry of the Jay, but few realize that this elegant bird is an expert mimic and a fine songster. As I lay one

spring day in the Concord woods watching some feeding deer, the clear, sweet piping of an Oriole resounded from a tall tree above my head. The intermittent song flowed on, but the singer sat concealed among the leaves. At last it moved, and lo, it was a Jay! As I stood quietly one October morning in the forest, a troop of Jays passed and one of them emitted the mew of a Catbird. In the afternoon, as I sat writing in my cabin, the melodious distant song of a Catbird came from the woods near by. I went out to investigate and found a Jay ventriloquizing. He was making sweet, soft Catbird music in a shrub-oak only a rod from the cabin. The Jay can imitate the notes of Flycatchers, Chickadees, Wrens, Sparrows, and many other small birds. He rarely does this openly, but usually when hidden among the foliage, for he is an adept at hiding, even among the leafless trees of winter, when he quickly slips behind a limb to escape observation.

Our entertaining rascal can imitate perfectly the "Keeyou" of the Red-shouldered Hawk or the "Killy



(Photograph by E. H. Forbush.)

A BLUE JAY ANXIOUSLY DOING HER BEST TO FILL THE EVER-WAITING MOUTHS OF HER YOUNG

killy" of the Sparrow Hawk. He seems to practise these notes as a joke, perhaps to strike terror into the hearts of the smaller birds. William Leon Dawson reports that he has seen a Jay terrorizing a group of Tree Sparrows by imitating the cries of their arch enemy, the Great Northern Shrike or Butcher bird. The Jay can puzzle and alarm the smaller birds by imitating their cries of distress. Dr. Hatch says that once while hidden in a fallen treetop waiting for a deer he saw and heard a Jay engaged in such mimicry of little birds "as no language can describe." The notes, he says, fell in showers like dewdrops, almost



(Photograph by Dr. S. W. Bailey.)

THE SITE OF A FALCON'S AERY IN BERKSHIRE COUNTY, MASSACHUSETTS. THIS IS 650 FEET HIGH

inaudibly; but they were among the clearest, most delicate, sweetest, and melodious that human ear ever heard. He continues: "If a diet upon canary brains and mocking birds' eyes affords such inspiration, these songsters contribute as much in their deaths as in their lives, and the regally plumed Blue Jay should live forever."

Our versatile bird also has many varied notes of his own which are uttered only in peace and contentment, in the quiet of the woods, where he improvises to his heart's content, practicing the varied pleasing modulations of his lower tones. In autumn, when acorns are ripe, a hidden observer may hear a concert of such improvisations conducted *sotto voce* by the feeding flock. At times the Jay makes in his throat a sound not unlike the tapping of a Woodpecker on a tree-trunk, and often while vocalizing gesticulates and bobs about in a very ludicrous manner.

One of the most interesting traits of this versatile fellow is the habit of storing food against a time of want. Those who feed birds often complain that the Jay carries off quantities of their bird food. Much of this he hides away in knot-holes or crevices of the bark. Horace O'Connor reports that he saw a Blue Jay, with a piece of bread or suet in its bill, light on a maple limb and thrust its find into a hole. It then dropped to the ground, picked up a dead leaf and laid this over the hole; but the wind

blew the leaf away, and the Jay, failing in an attempt to catch it in the air, selected a smaller leaf from the ground and jammed this firmly into the hole, so as to conceal its treasure.

That great American naturalist, Mark Twain, tells an amusing yarn about how a Blue Jay found a hole in the roof of a cabin into which he dropped corn in a vain attempt to fill up the hole. Another Jay finally looked in at the open door and saw that his companion was unwittingly trying to fill up the cabin; whereupon the whole curious clan of Jays that had gathered went into spasms of enjoyment over the joke on their simple friend. This story illustrating the Jay's character, though "somewhat exaggerated," is truer to life than some of the tales of the nature fakirs.

Jays certainly have some queer habits. Mr. J. N. Baskett asserts that he saw a Jay pluck off pungent walnut leaves, lift its wing and rub these leaves into the feathers repeatedly. Who will explain this? Miss Grace Ellicott reports that in nesting time she saw a Jay alight on an ant-hill and rapidly and eagerly seize the large ants. Lifting a wing on one side or the other after each capture, he tucked the victims into the feathers under or behind the wing. He had laid in quite a store when frightened from his task. Mr. W. L. McAtee suggests that the bird was taking advantage of the instinct of ants when disturbed to fasten their jaws on any object. This Jay may have been hurrying to collect a load of food for his ever-hungry nestlings.

The Jay is a devoted parent. Normally a forest bird,



(Photograph by R. L. Coffin.)

THE FALCON'S EGGS IN THE AERY ON THE SHELF OF THE INACCESSIBLE CLIFF



(*Photograph by R. L. Coffin.*)

THE SITE OF THE FALCON'S NEST ON A HIGH CLIFF OVERLOOKING THE CONNECTICUT VALLEY. IN GETTING THIS PICTURE THE ARTIST LOST HIS CAMERA AND VERY NEARLY HIS LIFE

brooding in somber pines, it has learned, where unmolested, to nest in the city and in some cases even in the vines on verandas; but, wherever it makes its home, it suddenly becomes silent and discreet in nesting time. A female that I watched had her home in a pine grove, with dead twigs scattered all about on the ground; but she did not use such decaying timber for her nest, but went some distance, and with bill and claws, exerting all her strength, broke off tough dead hardwood twigs from trees and with them built a strong platform for her home. After the eggs were laid, her harsh screams were rarely heard, and when the young were hatched she reached the nest in the most secret and roundabout way. The nest was in a pine. When approaching the nest she hopped on a low branch, and then in a leisurely way hopped to another, and so continued, circling the tree, but gradually mounting higher and higher by her spiral stairway until at last she reached the nest. In this casual way she was enabled to scan the neighborhood for enemies on all sides of the tree before coming to the nest.

In another nest I found three fluffy younglings nearly fledged. The westering sun threw its level rays between the dark-plumed branches, stirred by the sunset breeze, and lighted the pale azure crests of the nestlings with the glories of the sunset. What a birthplace this! and what a birthright—thus to be cradled in a cozy nest swung high in a noble pine, and there to be rocked by the winds of the world as they toss the branches to and fro; to open wondering eyes to the blue sky and the blazing sun; to know no roof but the arching dome of heaven, no shelter but the tender mother's wing; to receive food like manna from the skies; to wax strong, fit and eager, and then to spring forth upon the air full-winged and free—what a wonderful life is that of the "fowls of the air!"

The Blue Jay is a cleanly bird. It bathes frequently and keeps its glossy plumage in good order. On a hot summer day I saw from the window of my summer cottage, in a grove of tall pines, a Jay lying at full length in a patch of sunshine on the forest floor of fragrant pine leaves, its lovely wings and tail expanded, drying its plumage after a bath in a near-by spring. It was laying its "washing" out to dry. This may be a common habit



(*Photograph by R. L. Coffin.*)

DOWNY YOUNG FALCON'S IN AERY SURROUNDED BY THE FEATHERS OF THE BIRDS THAT HAVE BEEN KILLED FOR THEIR FOOD

among Blue Jays and Robins, but it is rarely observed and must be practised only in seclusion.

Jays are clannish creatures. They delight in company, noise and excitement. After the breeding season nothing seems to give them greater joy than to flock together and yell in chorus. I have often approached carefully such gatherings and have been unable to find any tangible cause for the excitement. But now and then they discover a drowsing owl, and then indeed there is an uproar, and "blue flashes to blue as they converge to the attack." From the uproar one might well expect a battle to the death. The entire mob seems to precipitate itself upon that devoted owl, as if determined to destroy it or die in the attempt. Screaming with rage and horror, they seem to shriek, "Thief! murderer! assassin! your hour has come"; but after half an hour or so the owl seems to be little worse for wear, and we begin to realize that the battle is mostly bluster. Hawks are attacked and insulted in much the same way, but the Sharp-shinned Hawk sometimes turns on his tormentors and lays one low, when the rest incontinently flee.

There is one Hawk, however, that the Jays let severely alone, and that is the American Peregrine Falcon or Duck Hawk. This swift and powerful Falcon is the Jay's worst enemy. It nests on mountain cliffs, and from the heights surveys the shining rivers and the valleys spread below.



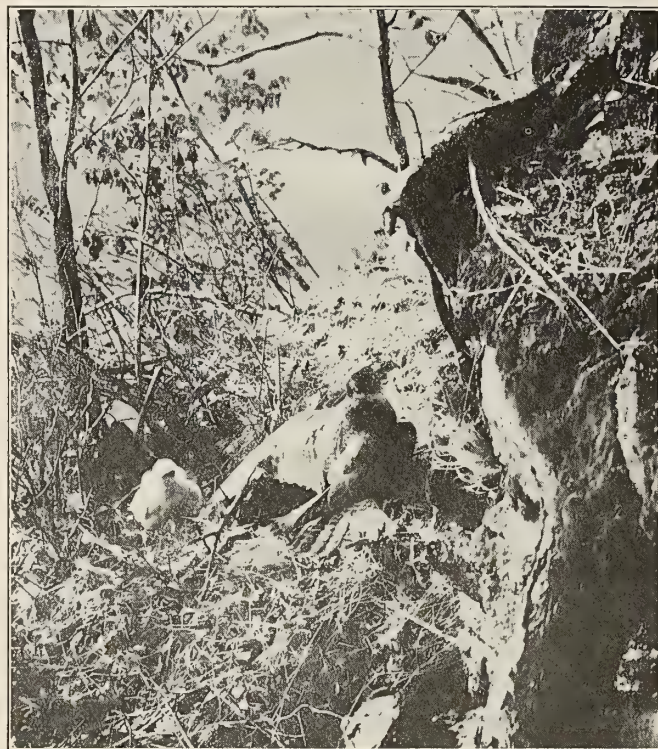
(Photograph by E. H. Forbush.)

A YOUNG FALCON, HALF-FLEDGED, SEEMINGLY SURPRISED AT THE SIGHT OF THE WORLD

Its piercing eye selects its prey, on which it falls like a thunderbolt. It is the master of the air within its wide domain.

Two men who were trimming apple trees in a valley saw a Blue Jay flying across a field and making for the woods. Suddenly a Falcon shot down from the mountain cliffs high above them, the air hissing from its half-closed steely wings. The Jay's assurance vanished in a breath. He stayed not to insult this enemy, but in mortal fear dived precipitately into a heap of apple-tree trimmings.

Quick as he was, the Hawk was swifter. As the Jay vanished into the brush, the clutching Falcon relieved him of his tail, snatching it out as the Hawk's downward course was changed barely in time to clear the heaped-up limbs. The two farmers were curious to know whether the Jay had escaped unscathed, so they walked over and beat up the brush heap. At first the Jay in his fear of the Hawk would not leave his place of refuge, but by



(Photograph by H. K. Job.)

THE FALCON AND YOUNG AT AERY, SECURELY HIDDEN FROM THE WORLD

trampling on the pile they started him at last, and he flew silently and swiftly to the woods, as if the "devil was after him."

In the days of chivalry, when Hawks in falconry, "the sport of kings," were hooded and carried on the hand to the chase, no bird was nobler than the Peregrine, and today our so-called Duck Hawk is the swiftest bird of the forest. A friend tells this story to illustrate the power of its stroke: He was shooting one day on the banks of the Connecticut River when a large Merganser, or Shel-drake, flew past high over the water. A Duck Hawk suddenly shot out of the sky, struck the bird such a powerful blow as to throw it ashore, and sped away so quickly that my friend's shot failed to reach it. He picked up the dead Merganser and found a great part of its side torn out by the force of the blow or the clutch of those powerful claws. Those who know the hardiness of Mergansers and their tenacity of life will appreciate the power of that stroke. The Falcon's swiftness may be judged by the following:

When hunting on the Banana River, in Florida, a friend saw a flock of Blue-winged Teals flying over the water. The remarkably rapid flight of these Teals is well



(Photograph by E. H. Forbush.)

A YOUNG FALCON NEARLY FLEDGED, LOOKING WITH HOSTILITY ON THE WORLD

known to sportsmen. Suddenly from somewhere a Duck Hawk shot through that flock like a thunderbolt, struck down three—one after another—and, seeing the hunter, passed on, leaving the little ducks lying dead on the water.

The dexterity of this bird in the air may be indicated by the fact that they are able to catch Chimney Swifts, which are so swift and skillful on the wing that they are extremely difficult to take. They give the Falcon a game of tag. In trying to catch one of these little skimmers of the sky, he dives and twists as they keep the air and dodge his swoops, until at last one, not quite quick enough, is plucked out of the air by one of the Hawk's outstretched and quickly closing talons.

On May 20, 1917, I reached an aery of these Hawks. I worked down to it from the top of a precipice 500 feet above the river below. The single young one—the only one that hatched from the clutch of three eggs—was more than half grown and covered with white down. There was nothing that could be called a nest on this rock-shelf, but the nesting place was surrounded by small bushes growing from the scanty earth that had lodged there. Here the young bird sat and viewed the world from the shadow of the overhanging rock. He was surrounded by the feathers of many Blue Jays and some Orioles, Robins, Flickers, and other small birds which had been brought to him by his parents, and he called intermittently to his sharp-winged, powerful mother, sailing high overhead and screaming harshly. Soon the male joined her, and both dropped down at me with startling rush of wing and menacing cries. One of the birds dived straight

down from a distance of about 100 feet, directly overhead, and passed suddenly with a resounding rush of wings about ten feet away, bounding upward to its original height without any perceptible effort or motion of its pinions, which were held about half open. What tremendous power and spirit these birds evince! Later both of them hung high in air against a gale that rushed furiously over that mountain-top, and not a motion of a flight-feather could be detected. What held them, as if by sheer force of mighty will, against such a wind far above that rocky summit?

No bird can escape them in the air. Even the Carrier Pigeon is overtaken. When the Pigeon sees the Falcon he rises upward to a tremendous height, but eventually the Hawk gets above him, and then, shooting down, strikes him to the earth. Occasionally the Hawk misses or takes off only a few feathers, but he perseveres, and in the end almost always overtakes his prey.

On the mountain-side, at the foot of the cliff, on the talus where the rock has weathered away and earth has been formed through the ages, the forest growth stands, reaching upward along the rocks. All along the foot of this cliff are scattered feathers of birds which the Falcons have killed. Those of Pheasants, Pigeons, Night Hawks, Blue Jays, Bluebirds, Orioles, Flickers,



(Photograph by E. H. Forbush.)

YOUNG FALCON JUST BEFORE HE LAUNCHED INTO THE AIR FOR HIS INITIAL FLIGHT, RIDING IN A MOMENT THE UNSTABLE SHIFTING ELEMENT THAT MAN AFTER CENTURIES OF FAILURE HAS ONLY BEGUN TO CONQUER

Phœbes, Kingbirds, Robins, and the wings of other small birds show the destructiveness of these Hawks.

On June 10 I visited the aery again. Lowering clouds drifted about the mountain-top in sheets of white mist, now hiding the valley below, now unveiling the lovely landscape. The woods were wonderfully beautiful; the leaves fully developed, and the miracle of spring and summer was consummated. Some leaves that were tiny leaflets only ten days before have now reached their full span; but no one knows how they developed and no one watched them grow. The young Falcon that a few weeks before was a little downy white chick was now a hawklet, nearly full grown, dark as the parents, with wings and tail ready for flight and only a few downy filaments of his chickhood plumage remaining. On June 11 he launched boldly out over the gulf on strong and perfect pinions, riding in a moment the unstable, shifting element that man, after centuries of failure, has only just begun to conquer.

The Duck Hawk is a destructive bird. It slays song-birds, game-birds, waterfowl, and domestic pigeons; hence it is proscribed and every man's hand is against it. But this bird of the crag and the sky is now so rare in New England that we cannot afford to countenance its extermination. I know of only a few pairs nesting within the boundaries of Massachusetts. It is one of the living links that connect our times with the days of the forefathers and the untrodden wilderness. This bold, fierce bird now enters even some of our cities. It breeds on the Palisades of the Hudson near New York City. It alights and roosts on the tall Custom-house tower in Boston. Not long ago a sailing vessel was crossing the Atlantic, and while she was still far from land a pair of these

Falcons sailed down from the sky, alighted on her upper spars, perched on a furled sail for the night, and then set out boldly the next morning for the continent of North America. Let us hope that they reached it in safety. I would rather see one of these Falcons breasting a raging gale far above the mountain-top than watch the maneuvering of a thousand domestic doves. What flight so grand as that of the fierce Hawk riding upon the gale! What rush so swift and powerful as its daring plunge in pursuit of its fleeing prey!

I believe with Thoreau that we should not exterminate the deer to replace it with the hog, nor the hawk to make way for the barnyard fowl.

As I sit here in my village home writing the last few lines, the sun sets in glory and its glow fades slowly out of the western sky. As the light over my table is turned on, a tremulous wail comes in at the open window, and there sits a little gray owl on a limb of the wayside maple, regarding the illumination with wondering eyes. Again the owl sends forth its mournful cry, and, spreading its noiseless pinions, sails away. How the visit of this little night bird stirs the blood and breaks up the monotony of the winter day. Whence came it, and how far? Like the breath of a forest wind, it has come and gone into the gloaming, but its coming has made the day memorable. The time may come when to many it will be a priceless boon to hear an owl on the bough, to see a deer in the woods, a duck on the river, an eagle or a hawk in the sky. Let us protect the eagle that soars on high, the little owl in the village street, and the falcon on its mountain cliff, for their days of safety in the isolation of the untraveled wilderness are past and gone.

The Land Beyond Kona

[Continued from Page 95]

FORESTS THE MOUNTAIN PEOPLE'S BEST FRIEND

Building a new and better agriculture on the one they now have, the hill farmers must first of all take thought of their woodlands. There must be an end to the destruction of the forests. Instead, they must be made steady sources of income and be worked largely by the men who live about them in the seasons when farm work is least urgent. The farmer profits for the time being when a company comes in, cuts over a few thousand acres of land, builds towns and railroads, employs every available man at good wages. He profits, whether he goes to work in the mills or whether he raises products to supply the new demand for it at a high price. But when the tract is cut over, the mill moved, the tracks torn up, the houses dismantled, he is back where he was at first and his country is much poorer in natural resources. With a smaller mill as a fixture and a steady demand for his timber, or for his labor in the woods when he is not busy with his crops, the forests would be an asset he could count on for all time.

Another step toward this better farming system must be the development of the orchard industry. This is one of the finest of fruit countries. Even now many apples are shipped out of the county almost every year. They are grown in old orchards that are little cared for, hauled to the depot in wagon beds, dumped into box cars with other apples of all kinds, and necessarily sold for a very low price.

With the development of fruit-growing will naturally come more attention to potatoes, cabbage, and other truck crops to which this section is admirably adapted; also the development of by-product industries—canning, cider-making, dairying, and so on. These things can increase acre production many-fold over the growing of the staple field crops.

Once the deplorable and criminal waste of its greatest natural resource is stopped and the forests fitted into their rightful place in the life of the section, this mountain country should come into its own as one of the most prosperous and progressive of farming regions.

The Mystery of a Buried Forest

By JOHN B. CUNO

THE discovery of an alleged prehistoric forest of cypress stumps in the heart of the National Capital has recently stirred the press of the country. In excavating for the foundation of the Hotel Walker, at Connecticut Avenue and De Sales Street, Washington, D. C., the buried forest was uncovered bit by bit.

A group of geologists of the United States Geological Survey, after an examination of the workings, stand as authority for the stories which have been appearing in newspapers and magazines, to the effect that almost in the shadows of the White House is the remains of a

contains the stumps in an upright position, is evidence that the forest remains cannot be less than 20,000 to 30,000 years old. So far as the writer is aware, the existence of this sandy clay layer covering the entire excavation is not definitely established.

THE SHADES OF "BOSS" SHEPHERD

Furthermore, the clay material discovered above the stump layer may very readily have been dumped there in the days of the energetic "Boss" Shepherd, an early governor of the District, when he pushed vigorously the filling in of swamp areas within the District, cut roads, and leveled off hills. The geologists admit that this same material outcrops in other sections of the District.

All agree that the area covered by the immense excavation was a swamp, and that a stream whose source was Mount Pleasant, a suburb of the city, flowed through the very point where the excavation was made. That an artificial fill was made at that spot is granted, but there is disagreement as to the depth of the fill. "Boss" Shepherd, in the seventies, built a causeway on Connecticut Avenue which in itself was ten to twelve feet above the surrounding country, and at the point of the excavation there was an old dumping ground which had been used for years. The dumping ground itself was of considerable depth.

Neither groups have had the time to examine into the early engineering records of the city to ascertain for sure just what was the depth of the fill, but the writer has personally measured it and found it to be from sixteen to eighteen feet throughout the excavation. This is the depth at which the layer of muck that contains the stumps was found. The geologists claim that the artificial fill was from two to twelve feet in depth. The fill in no case was as little as two feet, and in nearly every part of the perimeter of the excavation one can still plainly see that the fill extends below twelve feet.

WHO STOLE THE TRUNKS?

One of the most peculiar things about the discovery is that trunks of the trees, either as remnants of trees standing or as remnants of trees falling, were not found. There were found well preserved an abundance of large branches, twigs, leaves, seeds, fruit scales, bark, and other plant debris. The geologists claim the trunks rotted away while standing. This is highly improbable, because decay would have taken place at the point where the water or mud or quicksand met the trunks, and the trunks would then have fallen, become submerged, and been preserved as well as the stumps and branches. It seems more likely that the trees were felled by the early settlers and were removed for use in building construction in the District of Columbia or in neighboring places, such as Annapolis, Maryland. It might be interesting to know



THE STEAM SHOVEL DISCOVERS ONE OF THE ALLEGED ANCIENT CYPRESS STUMPS IN THE EXCAVATION AREA, THE AGE AND ORIGIN OF WHICH ARE IN DISPUTE

forest dating back thirty thousand and perhaps one hundred thousand years. The public seems to have accepted the geologists' theory.

This article aims to present for the first time the viewpoint of the forester and the man familiar with wood and cypress forests, whose theory is that the stumps are not prehistoric, but were left when the early settlers of the District cut over the area surrounding the excavation.

The geologists claim that a layer of light gray sandy clay above the layer of muck, six to ten feet thick which

that one of the steam-shovel men presented a bullet which he claimed he had found at the base of one of the stumps.

The United States Forest Service identified the wood as cypress wood, while members of the Smithsonian Institution identified the seeds, the fruit scales, and the leaves to be the same as the present-day bald cypress, *Taxodium distichum*. Bald cypress is found growing naturally down the Potomac River at Marshall Hall, about twenty miles from Washington. Cypress, as we know, has the tendency to follow streams, and as the filled-in stream was joined to the Potomac, it seems that cypress may very readily have grown along it. It is highly improbable, however, that in 30,000 years the tree would have the exact characteristics of the group from which it arose. It is more likely that the cypress would have changed some in that period of time.

THE SAME OLD CYPRESS

The wood itself is exactly the same as present-day cypress, except that it is lighter when dry and somewhat grayer in color. The difference in weight may be due in a large measure to the leaching out of resins and other chemicals—a process which would not take many years. On the other hand, no organic or silicious matter has infiltrated the cell cavities—a thing which would very likely have happened to some extent had the wood been buried for 30,000 years. It must be borne in mind that 30,000 years is a very conservative estimate. Certain of the geologists admitted that this first estimate of one of their colleagues was far too conservative and that the trees grew more likely 100,000 years ago. It is interesting to note that cypress shingles were shipped from Bladensburg, Maryland, a town five miles northeast of Washington, around one hundred years ago.

Most of the news articles concerning the size of these stumps claim that they were from 9 to 14 and in some cases 25 feet in diameter. These sizes are erroneous. The writer has kept in touch with the excavation from the time the work was started and has never seen a stump more than five feet in diameter immediately above the usual root swelling. Possibly some of the measurements were taken across root swellings.

The argument is by no means ended. The geologists have reviewed the case only from the standpoint of a study of the soil strata. It is hoped that further investigation may be made from the viewpoint of the forester. Perhaps an extended search into the engineering records of the city will settle the question definitely.

An Essay on Frogs

The Chicago Board of Education has caused a classic essay to be immortalized in type. It is about frogs and was written by a young Norwegian. The essay: "What a wonderful bird the frog are! when he stand he sit, almost. When he hop he fly, almost. He ain't got no sense, hardly. He ain't got no tail, hardly, either. When he sit he sit on what he ain't got, almost."

America's Transition from Old Forests to New

[Continued from Page 71]

fire does not alter this view, for is not wanton destruction without profit a tolerable manner of sport, as it were, being without the sordidness of any compensating end?

There is nothing surprising in all this. It is not wholly wrong or half wrong. The trouble is that it is only half right. That we love the forest for its own sake—that stumps and blackened wreck-strewn areas inspire a fighting feeling—shows a good heart and is potent for good. But the impulse of the heart needs guidance by the head, instead of by the persecution complex seeking a scapegoat for the sins of all of us. It needs the intellectual honesty to perceive that all are to blame as much as any, and that none is as much to blame for things as they have been and are as for not making more effort to improve them.

THE CYCLE OF PUBLIC OPINION

For the essence of the American forestry problem is that every forested country proceeds through well-defined stages of economic development, during each of which certain things are or are not possible, and that the measure of public intelligence is not the deploring of the past, but the capacity to recognize the arrival of changed conditions and make the desirable adjustments to fit them with the least past-engendered prejudice and conflict. We have, on the other hand, been inclined too much to throw stones at retreating shadows, with our own backs to the sun. These stages of development are worth studying, however, if the purpose is to utilize the knowledge constructively. They are almost always, in all countries, broadly divisible into three:

The wholly inconsiderate exploitation period from which we have emerged.

The period, which we have entered, of alarm, conservation, and experimenting tentatively with actual reconstruction methods.

The final settling down, which we have not attained, but is inevitable, into such fairly adequate forest production as comparative land values warrant, with the burden and benefit divided by sound economic law between public and private agencies according to their facilities and needs. And further influencing the nature of the task will be much readjustment of forest use, as distinct from production, so a lesser volume of wood will go further through better manufacture and fabrication and the utilization of what are now lost by-products.

EDITOR'S NOTE.—This is the first instalment of Mr. Allen's article, which will be published in four numbers of AMERICAN FORESTRY. The second instalment will appear in an early issue.



THE MAGNIFICENT LOMBARD ELM AT LOMBARD COLLEGE, GALESBURG, ILLINOIS. THIS TREE, SET OUT IN 1868, IS THE SECOND LARGEST ELM TREE IN AMERICA, WITH A SPREAD OF ONE HUNDRED AND TWENTY-EIGHT FEET AND FIVE INCHES



THIS IS SACRAMENTO'S MEMORIAL GROVE IN CAPITOL PARK, SACRAMENTO, CALIFORNIA—UNIQUE IN THAT TREES HAVE BEEN TRANSPLANTED THERE FROM PROMINENT BATTLEFIELDS OF THE CIVIL WAR, TREES COLLECTED BY CALIFORNIA WOMEN OF THE G. A. R. (See page 110.)

Massachusetts State Forest From An Old Estate

By A. H. SCOTT

THE recent acquirement as a State forest of the famous Whitney estate in the Berkshire Hills, by Massachusetts, is a fitting tribute to the efforts of the Massachusetts Forestry Association, which celebrated last month its 25th anniversary. The Association, together with the State Conservation Association and a number of other State organizations, have campaigned vigorously and untiringly for the extension of State forests. Due to those activities, Massachusetts is now having a forestry awakening, which has already resulted in the addition of over 12,000 acres to the State-owned forests. Up to the time the deeds were conveyed, the area of State forests amounted to only 33,456 acres. Of this small acreage over 20,000 acres were located in the extreme

Neighboring property was gradually acquired, along with other plots of mountain land, at a cost of sometimes as little as \$4.00 per acre. Between 1892 and 1897 approximately 14,000 acres, comprising nearly the whole broad table-land at the top of the mountain, was bought up and consolidated into a single holding. A large chalet, stable, water-tower, and numerous outbuildings were erected, and for about four years the place took on some of the atmosphere of an ancestral English estate. Of the numerous farm-houses acquired with the various properties, some were torn down and some were remodeled to serve as game-keepers' lodges or house the help who carried on the necessary work of upkeep and development.

Mr. Whitney made extensive plans for the development of the property, started scientific farming on a huge scale, and turned a large acreage of the pasture and timberland into a game preserve. A high, tight, wire fence was erected around a section of nearly 8,000 acres, into which were turned 45 American bison, 140 elk, 12 antelope, two pairs of moose, and twenty deer. Bridle paths were cut through the most picturesque sections of the estate, which have for years since the place was abandoned guided anglers, berry pickers, and skii runners through the otherwise unblasted forest fastness. Due to its inaccessibility in the days before automobiles would climb



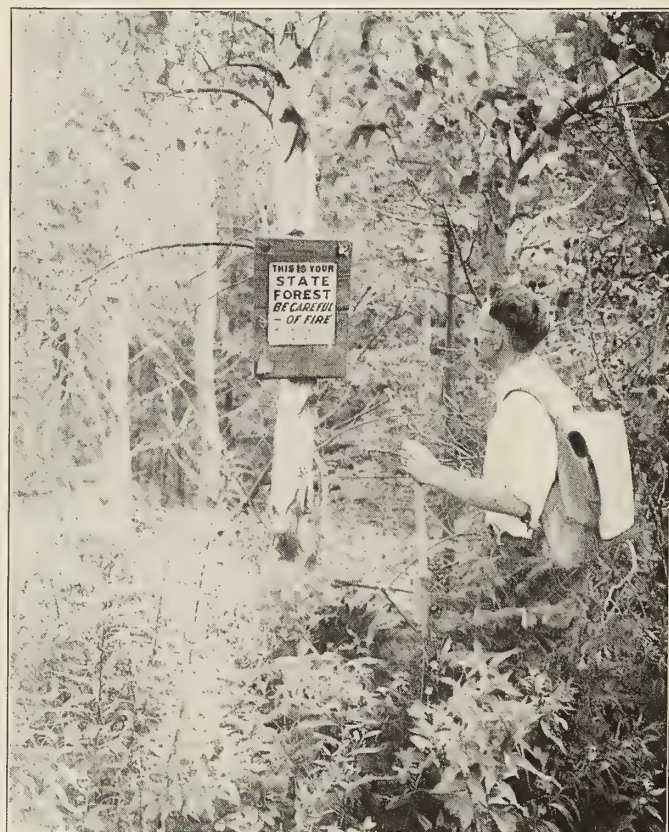
THE WHITNEY CHALET

The old house is gray and weatherbeaten after twenty years' disuse, and the State plans to dismantle the building.

western county of Berkshire, which borders on New York State, and where interest and appreciation of wooded lands is keenest. It is within the borders of this country that the latest acquisition to the State forests is located.

Massachusetts is one of the smallest States in the Union, having an area of but 8,315 square miles, or approximately 5,322,000 acres, while the population is well over four millions. For such a populous Commonwealth the State has a surprisingly large acreage suitable only for the growing of trees, estimated by the State Forester at 2,672,950 acres, of which 700,000 acres constitute, in their present condition, practically worthless cut-over and burnt lands.

For the past twenty-five years the tract has been known as the Whitney estate and was the property of the late William C. Whitney, of New York, father of the present Harry Payne Whitney. It was previous to 1893 that Mr. Whitney bought a small parcel of land as the result of a horseback ride to the top of what is known as October Mountain in the town of Washington.



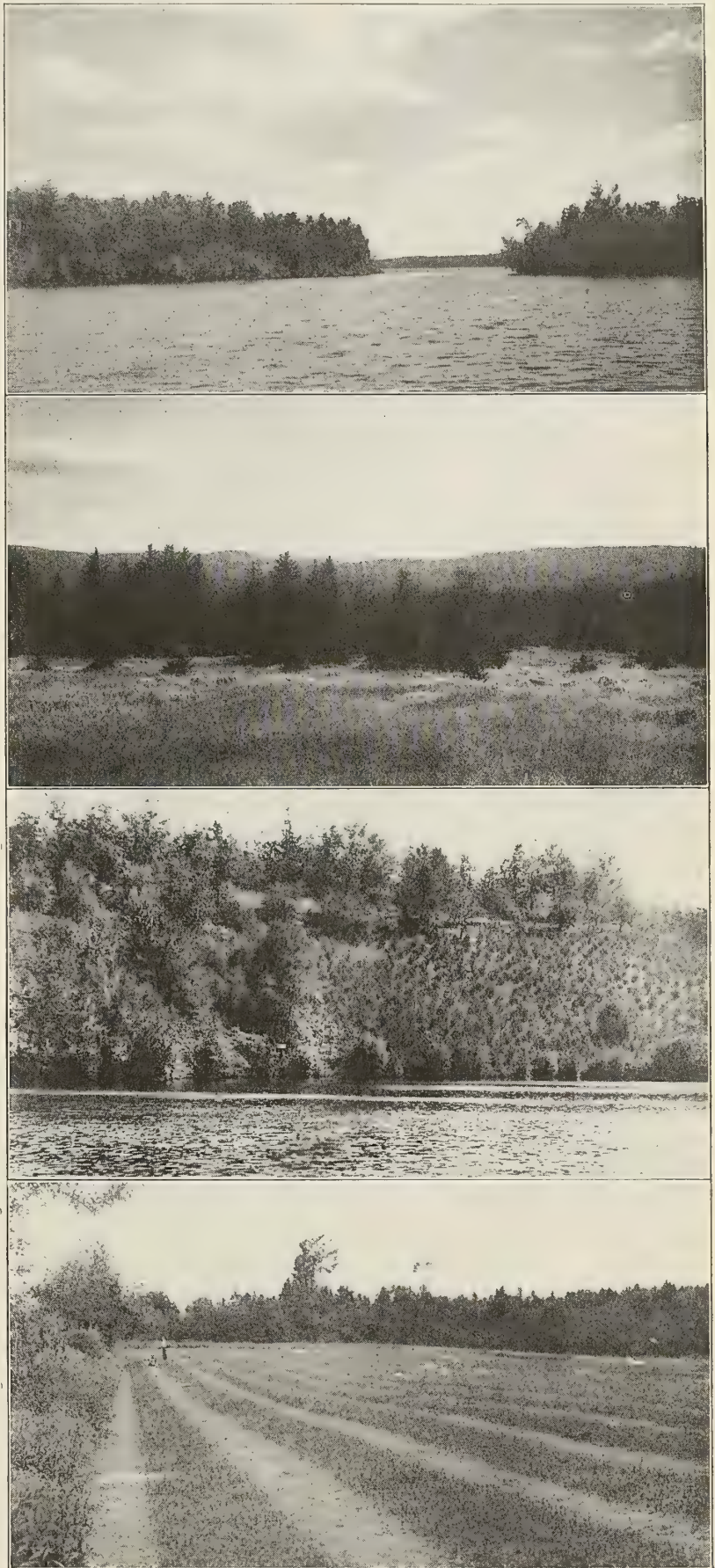
THE FOREST IS WELL POSTED FOR FIRE

The thoughtless hiker and camper is reminded that he should be careful of fire on his own property.

hills, the Whitneys soon lost interest in the project and spent but three summers at their mountain home. The estate was carried on for several more years, but in 1904, shortly before his death, Mr. Whitney disposed of all the farming and dairy machinery and live stock, boarded up the buildings, and left the place in charge of a single caretaker. The buffalo herd was turned over to the Bronx Park Zoo in New York City, while the elk were shipped to the Adirondacks and turned loose. The antelope had died, being unable to stand the severe winter weather at the high altitude. The four moose, however, together with several of their progeny and all the deer, had escaped during the previous winter. Two of the original four are now roaming the hills and they with their descendents make up a herd of twenty-four, according to the count of district game wardens who are in close touch with the wild life of the mountain. Two of the moose have been shot by hunters during the deer hunting season, one in 1920 and another in 1921. The penalty for killing a moose in Massachusetts at any time is a fine of \$100.00, but the perpetrators of the act have never been apprehended. The liberated moose now spend most of their time not far from their original haunts and may occasionally be seen by the more venturesome feeding on lily pads in an almost inaccessible swamp on the estate. Numerous deer continue to live on the mountain, but the annual open season has prevented any marked increase in their numbers. Hunting has always been prohibited on the tract, but, as it is unfenced, the animals have wandered into unposted territory and fallen victims to hunters' bullets.

The Whitney Realty Company, of New York City, headed by Harry Payne Whitney, has had the estate on the market for several years and held the property at \$100,000. When the agitation was started about a year ago for State purchase in order to head off acquisition by lumber interests, the price was reduced to \$75,000 and finally to \$60,000. The State had available but \$50,000 for the purpose, and the balance was made up by public-spirited men of western Massachusetts who had been instrumental in arousing interest in the public mind of the desirability of making the territory a State forest. Along with the \$10,000 donation the State also received as a gift a valuable tract of 1,000 acres of standing timber which adjoins the Whitney land and which was part of a large estate in the town of Lenox, the famous summering place of some of New York's wealthy families.

In 1912 the city of Pittsfield took by right of eminent domain a portion of the property, amounting to about 2,000 acres, for the purpose of insuring a permanent water supply and built a large reservoir and dam. The reforestation pol-



BEAUTY SPOTS ON THE STATE FOREST

Two Upper—Lake Ashley, Pittsfield's main water-supply reservoir, bordering on the new Massachusetts State forest, and a bit of the broad table-land at the top of October Mountain, on which lies the main part of the forest.

Two Lower—The forestation policy established by the city of Pittsfield when it took a portion of the estate in 1912 to protect its water supply will be supplemented by new plantings to be made by the State. Nursery of 309,000 two-year-old Norway spruce transplants which was established on the mountain in the spring of 1922.

icy established at that time by the city is now to be supplemented by a similar policy of the State, the forestry department having already mapped out a tentative thinning and planting program for its new property. A nursery containing 309,000 two-year-old Norway spruce transplants has been established in what was formerly a meadow near the main farm building. These will remain undisturbed for at least two years or until the State Forester has had an opportunity to make a more thorough study of the needs of the new forest and determined how they can be most effectively distributed. At present the output of the State white-pine nurseries is considerably behind the



THE "MOOSE FENCE" SURROUNDING THE GAME SANCTUARY

This is still intact for some miles of its length, but moose and deer roam at will over the whole property, on which hunting has never been permitted.

demand for transplants, having distributed nearly 1,000,000 trees this season, but it is expected that the spring of 1923 will see a sufficient surplus built up to establish a large pine nursery on the mountain. A section of approximately 500 acres at the very top of the mountain is at present nearly bare of trees, having in former years constituted the farm proper on which the crops for the support of the live stock were grown. A portion of this open land will be replanted as soon as the trees are available, but a large section of it will be set aside for the use of campers who are to be allowed on the reservation. In making this provision the tract will assume to a certain extent the status of a State park, where any one may camp as long as he observes the specified precautions in regard to fires and disposal of refuse, etc. Numerous signs have been placed in conspicuous places, bearing pertinent

phrases, which call attention to the fact that the reader is on his own property and suggesting that he be governed accordingly.

The old road up the mountain is now being made passable for automobiles and it will not be long before a new and previously inaccessible section of the famous Berkshire Hills will be opened for the enjoyment of all who appreciate nature in her primeval beauty.

Sacramento's Memorial Grove

ONE of the most unique memorial plantings in the United States is the Memorial Grove in Capitol Park, Sacramento, California, some of the trees in which have been transplanted from battlefields of the Civil War. This grove is located in about the center of the Capitol grounds and occupies half an acre, and here the city's annual memorial exercises are held. This interesting collection of trees and shrubs was planted and dedicated to the State of California by the ladies of the G. A. R. They are all historic trees collected from Vicksburg, Gettysburg, Missionary Ridge, Antietam, and other prominent battlefields of the Civil War. Included in the varieties are black walnut, shell-bark hickory, ash, water oak, willow oak, black-jack oak, silver maple, red maple, rock maple, tulip, basswood, mulberry, juniper, locust, white elm, slippery elm, and dogwood. There are also trees transplanted from the birthplace of President McKinley and from the plot of ground surrounding Garfield's tomb.

California is well organized to take care of her roadside planting needs also, for at the State nursery, near Sacramento, thousands of trees are propagated and made available for roadside and memorial planting by the different counties. The State stands the cost of this propagation and the various counties meet planting costs. Up to the present time about 600 miles of highway have been planted with stock from the nursery, which has been in operation for only little more than a year.

The Briefest Forest Fire Creed Ever Written

The foreword to the Pennsylvania forest fire manual was written by Gifford Pinchot, and it is so abruptly brief that any introductory comment would exceed in length the text itself. Here it is:

"The Forest is Your Friend.

"The water you drink comes from it.

"Nothing you use or wear could be yours without the forest's help.

"The State forests are your playground.

"They are wide open for you to fish, hunt, and camp.

"Our forests are almost gone.

"They will grow if fires are kept out.

"The Forest Fire is Your Enemy."

American Forestry Sustains a Double Loss

Henry C. Campbell and Jesse M. Overton, Vice-Presidents of the American Forestry Association and Prominent Leaders in Forestry, Claimed by Death

In the death of Henry C. Campbell, assistant editor of the *Milwaukee Journal* and a vice-president of the American Forestry Association, the forests of the United States, and particularly those of his native State of Wisconsin, have lost a devoted friend and a powerful ally. Mr. Campbell's death occurred on January 2 as a result of a cold which developed into bronchial pneumonia.

No man in the field of journalism in recent years labored more devotedly and untiringly than Mr. Campbell for the perpetuation and upbuilding of American forests. Throughout Wisconsin he was known as the champion of Wisconsin forests and for a number of years he has been an outstanding figure in the national movement to bring to the forest cause its rightful recognition. Few, if any, newspaper men excelled him in his broad grasp of the forest problem and none excelled him in the vigor and persistency with which he wielded his pen in behalf of public forest interests.

Mr. Campbell loved the forests deeply, not merely because they are beautiful and inspiring but because of the diversified service which they render mankind. He worked for years to preserve them from wanton destruction. Every week his paper carried a message of forest news in the form of a press sheet to every newspaper in the State of Wisconsin.

As chairman of the Wisconsin Forestry Association he fought to lessen the constant menace of forest fires in the north country. He was untiring in his efforts to hasten

reforestation on the millions of acres of barren cut-over lands in the Lake States and to win back to his native State the lost glory of forest dominance and comfort. Mr. Campbell recognized the need of State forests for the

preservation and development of recreation in the Lake States and he fought untiringly for a State policy which would guarantee to the people of his own and neighboring States natural forests and the right of access to the thousands of lakes in the north country.

Despite the many discouraging aspects of our forest problem, Mr. Campbell was always an optimist, and with a newspaper man's faculty of reading the public pulse in advance, he foresaw the awakening of the present public appreciation of America's needs for forests. "The chief foe of forestry is ignorance," he declared. "Hardly anybody is opposed to forestry. Progress is retarded not by direct opposition but by the indifference of the many who do not know and who do not understand."

To the tearing down of that wall of public ignorance, Mr. Campbell devoted a large part of his personal and business hours, and, in years to come, to him must be given the credit for having be-

queathed to his native State the broad and lasting groundwork of public enlightenment, upon which Wisconsin's future forests will rest.

His death is a double loss to the American Forestry Association in that he was not only a vice-president, but in the election of new officers just closed he was elected a member of the board of directors.



MR. HENRY C. CAMPBELL

Late Vice-President of the American Forestry Association and Assistant Editor of the *Milwaukee Journal*.

JESSE M. OVERTON

The South, and Tennessee in particular, has lost a valued and beloved citizen, an earnest supporter of forestry, in the death of Mr. Jesse M. Overton, a vice-president of the American Forestry Association and president of the Tennessee Forestry Association, who was suddenly killed in an automobile accident in Nashville, December 16, 1922. No man in the South was more widely known and respected in business circles. First of all, he was a man of rectitude, high ideals, few words,

lands was one of his ideals; wild life, game, fish, water supply were to him invaluable products of the forest which come of its right and proper management.

He was interested in the Southern Forestry Congress and was one of the leaders in organizing the Tennessee Forestry Association, of which he was president from its creation in 1917. He was a prime leader in establishing the Bureau of State Forestry in Tennessee, and gave it his support in engendering a sentiment throughout the State against forest fires.

At the time of Mr. Overton's death he was setting a splendid example by practicing conservation through the utilization of timber from his own holdings; and he took great pains to arouse among the citizens of that neighborhood a like interest in conservation, realizing the value of their understanding the facts about forest protection.

Much of his extensive interests were in the mountain resources—in coal, iron, and timber. He loved the mountain people and their rugged country, and labored for the development of both.



MR. JESSE M. OVERTON

Late Vice-President of the American Forestry Association and President of the Tennessee Forestry Association.

who did worth-while things with no flare of trumpets. He was a conservationist, not a mere collector of forest wealth. The development of the State's mineral resources and the unhampered productive capacity of wood-

Trees of God

Ye trees of God, who rear your head
To mark our noble soldier dead,
Are sentinels who watch alone
To guard each well-beloved one.

Ye lift green branches high in air,
As if in silent, wordless prayer
For those who have life's battles won
In noble duty, nobly done.

The everlasting symbol, ye,
Of life unending, radiant, free!
For no more steadfast is the sun
Than was each well-beloved one.

"Gone west!" "Lights out!" Three volleys!
Taps!

The flag half masted! Shadow shapes
Forever marching—"Column right!"
To glories hid from mortal sight.

But never shall their memory fade.
Beneath such trees' green pungent shade
A grateful nation bows its head,
And worships with its soldier dead.

—By Lilian Bell.

The Index for AMERICAN FORESTRY for the year 1922, Vol. 28, is now available. Members desiring copies may have them by applying for them at the Association's Headquarters, 914 Fourteenth Street Northwest, Washington, D. C.



EDITORIAL



OPPORTUNITY

ALL normal men and women love trees. All normal boys and girls love the woods. Upward of fifty million Americans make first-hand use of the forest every year for the gaining of livelihood, for recreation, for the propagation of wild life, for the warming of hearths, for the beautifying of homes, streets, or cities, for the memory of departed ones, or for other reasons that are close to the heart.

Those fifty million Americans want forests. They want them in sufficient abundance to meet their material and spiritual needs. They, with all their diversity of interests and all their intensity of feelings, possess a strength which once aroused and unified would be irresistible in the congress of public opinion.

The strength of the forest cause in America is its diversity of human interests. Its weakness is that same diversity of human interests *unorganized*.

There lies the great, the all-inclusive, opportunity of an American Forestry Association. To carry to those fifty million Americans the clear message of the forest cause, to enlist them under a common banner of sound, progressive forest policies for State and nation, to vitalize them with the spirit of action, is a task and a mission which can be successfully accomplished only by an organization of national scope.

The need for a strong, a dominant, a temperate na-

tional organization, which can touch the responsive chords of those fifty million men and women and serve them as a medium for the expression of their opinions, was never greater than it is today. And the opportunity for welding a tremendous country-wide sentiment—now so largely inexpressive—for forest protection and forest renewal was never so favorable as it is at the present time. Public sentiment for forests is in its first great awakening. It is feeling for the light. It is in a receptive mood. The call for a great national campaign of forest education with some definite leadership is most urgent.

The day is at hand when all forest-loving people should band together their efforts for the upbuilding of a stronger national association, which can represent them and their cause nationally in a fearless, aggressive and yet righteous way, and which can measure up to all opportunities. An organization of this character is the great need of the forest movement today. Its accomplishment would be the greatest step forward at this time, excepting the attainment of an all-inclusive forest policy for the nation. But this last, let us bear in mind, must be gained step by step, over one obstacle after another, while the upbuilding of a stronger association is an open, inviting field, offering the most promising and the most effective means for the ultimate accomplishment of needed forest policies and practices in America.

TREES AND TREES

FROM inquiries coming to the Editor, there appears to be some confusion in the minds of many readers of AMERICAN FORESTRY as to the present interest and activities of the Association in relation to such allied subjects as memorial trees, roadside planting of trees, shade trees for homes and municipalities, city forests and parks, trees for the "Hall of Fame," etc. An impression prevails in some quarters that with the recent change of officers the Association's policy in respect to these subjects has likewise changed.

Such an impression is unwarranted. The American Forestry Association is just as interested as ever in these subjects, and it will continue to encourage the protection and propagation of trees for all purposes which will make this a better and more beautiful country in which to live. The AMERICAN FORESTRY magazine will continue to present these subjects in its pages and to give them their just places in the great cause of perpetuating America's forest trees. To this end its interest in what is needed and what is being done in these allied fields is no less keen than formerly.

The only change in policy which the Association has made in respect to these subjects is one of a fiscal character. When the former President of the Association, Mr. Pack, resigned a few months ago, to organize the American Tree Association, he asked that he be permitted to carry on, in the name of that association, the special publicity which he had been conducting as President of the American Forestry Association with funds not a part of the regular Association.

In response to that request, the interim committee of the American Forestry Association, in a letter to Mr. Ridsdale, dated October 21, wrote:

"The committee has decided that the financial situation of the Association does not justify the expenditure of any of its funds for special printing in connection with the planting of memorial trees or trees bordering 'Roads of Remembrance.' The committee has no objection to having the special advertising of these subjects and the special printing done in connection therewith, which has hitherto been carried on under the auspices of the American Forestry Association, undertaken by Mr. Charles L.

Pack or under the auspices of the new magazine with which you are to be connected. The same decision covers the 'Hall of Fame' for trees, as far as special printing or other forms of special publicity are concerned."

DISMEMBERMENT OF THE FOREST SERVICE UNLIKELY

THE announcement that Secretary Fall will on March 4 retire from the Cabinet is one to make all friends of forestry breathe easier. Apparently the plan to disrupt the Forest Service by transferring to the Department of the Interior administration of the National Forests in their entirety is dead. Of that plan Secretary Fall has been a vigorous advocate. While the reason given for his impending resignation is the pressure of personal affairs, unofficial surmise regards his retirement as due in part at least to the President's decision not to support the transfer.

Public opinion has played the chief part in defeating Secretary Fall's desires. At the outset no one could have foreseen that this would be the case. One of the measures to which President Harding was committed when he took office, and one which he has evidently regarded as of large importance, was the reorganization of the departments. At first public opinion was either favorable to reorganization or not greatly concerned.

In the early fall of 1921, however, it began to appear that one feature of the Administration's plan of reorganization (though the plan in general and in detail was still tentative and undisclosed) threatened disruption of the Forest Service. The October, 1921, issue of AMERICAN FORESTRY called attention to the menace that this involved to the cause of forestry. The response of public opinion was astonishing. As the months passed, it became more and more evident that the people of the United States were deeply aroused.

It will be clear that the policy enunciated in this letter refers only to special forms of publicity outside those already provided by the American Forestry Magazine and the regular channels of the Association.

The opposition of AMERICAN FORESTRY to the transfer of National Forest administration, in whole or in part, to the Interior Department was based not on the question of the relative fitness of the heads of the two departments, Interior and Agriculture, to direct the National Forest policy, but wholly on questions of principle. It was urged that the Forest Service could not be broken up without serious public consequences, and also that if placed in the Interior Department the National Forests would be in charge of a Department in which they do not belong and could not function as in the past. But Secretary Fall himself, in his published utterances, did much, we believe, to make clear that his personal views were pronouncedly antagonistic to the basic principles of conservation, and that if he should obtain the power, which he was apparently eager to secure, disastrous changes would follow.

This was both fortunate and unfortunate. Secretary Fall, in our judgment, has done more than any other man to make the transfer at the present time impracticable. Had he commanded greater public support, or been less indiscreet, it is not impossible that the plan might have gone through. It is still not impossible that, now or later, on the initiative of Congress or with Executive recommendation, transfer to the Interior Department of at least the Alaskan forests, or of some of the present functions of the Forest Service, may be proposed. Essentially, the questions involved are questions of principle, not personalities. Friends of the forests must still be vigilant.

BEARS AND TREES

FOR some years past one of the classic examples of Federal administration in Alaska has been the brown and black bear story, now happily adjusted by centralization, in one single Government agency, of all duties of bear protection in Alaska. The story, while it lasted, afforded great gratification to all proponents of the reorganization idea, who dilated upon the absurdity of such a situation in the face of the fact that all bears were brothers under the skin, and in many cases were real brothers, differing only in the coloration of their skins. Why was it necessary that one Department should function as the guardian of brown bears and another Department should guide the destinies of black bear? There was not any convincing answer, except that the condition had been the outgrowth of other changes, quickly corrected as soon as it became evident.

There is an affiliation between bears and trees, as many bear hunters are aware. There is also an analogy between bears and trees in the consideration of questions of

proper allocation of Federal functions and responsibilities. If the brown and black bear situation justifies unrestrained humor and scathing criticism, should not a similar situation in respect to public forests provoke even greater merriment and more heated denunciation? Let us look this situation in the face—and smile!

Congress, by the act of February 1, 1905, created the Forest Service, charged it with the duty of promoting sound principles of forest management for the nation, and made it custodian of the National Forests. The Service has grown with its responsibilities, and there is today but little criticism of the way in which it serves the nation. Its ability to manage and conserve the forest properties of the nation has been so convincingly demonstrated that it is now rarely questioned. Every consideration of efficiency and economy justifies the assumption that the management of all Government owned or controlled forest lands should be vested in the Forest Service.

There are, however, some brown, gray, and even blue

bears outside the National Forests. For example, there are about four million acres of timbered Government land, unreserved and unappropriated, under the jurisdiction of the General Land Office, because various persons opposed its inclusion within National Forests. It is good forest land, the same kind the Government has otherwise reserved, some of it as good as the kind the Government is buying for National Forest purposes under the Weeks law. In its present status it can be logged only under amicable trespass proceedings, and protected from fire only after the fire emergency has reached its height.

Then there are the military reservations, which contain several hundred thousand acres of actual or potential forest land, used infrequently for maneuver purposes and controlled by military men, willing enough to develop the forest resources, but lacking the knowledge and the financial authority to do so. For the third count are a million and one-half acres of timber land revested in the Government by the forfeiture of the Oregon and California Railroad land grant, which is under the control of the General Land Office, with very inadequate provision for its protection and administration.

Finally, within the Indian Reservations are over five

million acres of heavily timbered and valuable land, entirely unallotted to the Indians. These lands constitute in part the sources of future timber supply. They embrace in part watersheds upon which navigation, water power, irrigation, and farming interests are so vitally dependent that any impairment of their forest cover would inevitably cause irreparable damage to citizens, municipalities, and States—damages far transcending the immediate land and timber values involved. For the most part they lie within adjoining, or close to established National Forests, so that their administration as National Forests would be the most economical way.

To give even partial and not very effective protection and management to each of these classes of land, substantially separate and distinct forest organizations, each functioning entirely separate and apart from other forest organizations but all with practically identical purposes and obligations, have been created. Does not this out-bear the bear story? The required treatment is the same as that used in the bear case: Put the entire job under one single qualified agency, which obviously is the Forest Service, thus eliminating duplication and waste of public effort and money.

LINVILLE GORGE AND GRANDFATHER MOUNTAIN

IN nearly every State there are forest lands which will serve for public recreation and which can be opened for camping under permit, perhaps employed in part as breeding places for game animals, and still be held for their major use, the production of timber. Several States, notably New York, Pennsylvania, New Jersey, and now Massachusetts, have set fine examples in this respect. New York, in the Catskill and Adirondack reserves and in the Allegheny State Park and Palisades Interstate Park, has more than two million acres of wild lands held for the enjoyment of the people, though the reserves have been acquired primarily as sources of timber. Pennsylvania has more than a million acres, and that State is now preparing to vote an expenditure of \$25,000,000 to increase this area of public forests and parks to not less than 5,000,000 acres.

It is high time for the Southern States to awaken to the recreational values of their forest country. The southern Appalachian Mountains, for example, contain some of the scenic gems of the eastern United States. But the Southern States are doing practically nothing to set apart their choicest areas of wooded and mountainous lands, and thus give them a justly recognized place in the sun of America's natural wonders. The State of North Carolina, it is true, has made a beginning by acquiring the Mount Mitchell State Park, to which this issue of AMERICAN FORESTRY gives considerable space. But the State has other natural assets of equal or greater scenic value, which it should preserve, before it is too

late, against the destructive menace of commercialized greed.

It is the opinion of Mr. W. W. Ashe, who has examined the entire Appalachian region from southwestern New York State to Alabama, that of the half dozen areas having that elemental charm which adapts them for natural parks, two of them, lying very close together, are in North Carolina. One is Linville Gorge; the other is Grandfather Mountain, some 20 miles to the northward, its rock-capped Alpine summit encircled with forests of spruce and balsam. These two areas, in his opinion, are the scenic gems of the Appalachians.

Linville Gorge is the most scenic area of large size in the State, if not in the entire Appalachian region. Two of the peaks on the long mountain which walls in the gorge on the east have peculiar and characteristic shapes, from which come their names, Table Rock and Hawksbill. On account of their distinctive forms, they are recognizable at great distances. These peaks should be included in a State park, as they are integral parts of the gorge region, which has been described as a fragment of the Grand Canyon. It is a water-worn chasm, a quarter of a mile deep and twenty miles long, carved through sandstone and quartzite, about a mile wide at the top, and, including the summits of the flanking mountains, would embrace between 10,000 and 15,000 acres.

Linville Gorge would form a natural park—a park for the purpose of preserving for the use of the people and to the advantage of the State one of its chief scenic assets.

Origin of the "Petrified Forest"

THE "Petrified Forest" of Arizona, really a series of petrified forests, lies a short distance south of Adamana, on the line of the Santa Fe Railway. There are four "forests" included in a Government reservation called "Petrified Forest National Monument," created by Presidential proclamation in 1906. The name "forest" is not strictly appropriate, for the petrified tree trunks are all prostrate and are broken into sections. The logs are the remains of giant trees that grew in Triassic time, the age of reptiles, according to the United States Geological Survey, Department of the Interior. The trees were of several kinds, but most of them were related to the Norfolk Island pine, now used for indoor decoration. Doubtless they grew in a near-by region and, after falling, drifted down a watercourse and lodged in some eddy or sand bank. Later they were buried by sand and clay, finally to a depth of several thousand feet. Their conversion to stone was effected by gradual replacement of the woody material by silica in the form called chalcedony, deposited by underground water. A small amount of iron oxides deposited at the same time has given the brilliant and beautiful brown, yellow, and

red tints which appear in much of the material. The sand and clay in which these trees were buried was afterwards washed away. Some of the tree trunks are 6 feet in diameter and more than 100 feet in length. In the first forest there is a fine trunk that forms a natural bridge over a small ravine, the water having first washed away the overlying clay and sand, and then, following a crevice, worked out the channel underneath. The length of this log is 110 feet, and the diameter 4 feet at the butt and 1½ feet at the top.

The petrified woods are beautiful objects for study. When thin slices are carefully ground down to a thickness of 0.003 inch or less and placed under the microscope they show perfectly the original wood structure, all the cells being distinct, though now they are replaced by chalcedony. By studying the sections,

F. H. Knowlton, of the Geological Survey, has found that most of these araucarian trees were of the species *Araucarioxylon Arizonicum*, a tree now extinct. It is known to have lived at the same geologic time also in the east-central part of the United States, where the remains of some of its associates have been found.

The Petrified Forest

(At Chalcedony Park, Arizona)

These trees perchance from new-born earth upsprung
In sovereign grace what day the naked land
Was pristine clothed with verdure. By God's command
They shared decay, but for the charm that clung
Unto their leaves, unperishing were hung
About their trunks, amid three dunes of sand,
The immortality of stone, which grand
Estate they keep till knell of time be rung.

They died, but light and wind and wave, love-led,
Conspired to weave for them a shroud with gems
As rare as Balkis brought unto the king;
With agate, jasper, chrysoprase o'erspread,
And desert organs piping requiems,
No victory hath their grave, their death no sting.

—M. J. Riordan.



GENERAL VIEW OF PETRIFIED FOREST. THIS PICTURE SHOWS THE LARGE NUMBER OF SPECIMENS IN THE FIELD. THE LOGS ARE ALL PRACTICALLY LODGED ON HIGH PLACES, SHOWING EVIDENCE OF THIS MATERIAL BEING AFLOAT WHEN THIS AREA WAS COVERED WITH WATER. THE REGION IS NOW ARID

The Friendly Wood Flame

By TOM WALLACE

Associate Editor, Louisville Courier-Journal

IN times past we have been wont to think of "King Coal" with feelings of pride and loyalty. During the present winter, however, many of us have awakened to the cold and bitter knowledge that "King Coal" can be the cruelest tyrant that ever blackened the pages of history. I am one of those who refuse to submit to the persecutions of "King Coal" in just so far as



CORDED WOOD READY FOR USE. IN MANY INSTANCES WOOD HAS BEEN FOUND SUPERIOR TO COAL FOR FUEL, BURNING EASILY AND FURNISHING A STEADY, EVEN HEAT AT A MINIMUM OF EXPENSE

I can help myself. I am ready to ally myself with any contender who stands for the welfare of the American public, and the contender which promises greatest relief to a large element of our population is my friend, the wood flame.

It is my conviction, as a result of personal experience, that every farm might produce its supply of fuel perpetually. Thus one-third of the population would be independent of the coal miners and coal-mine operators and of the effect of freight rates upon the cost of domestic fuel.

There is a widely prevalent impression that wood is an inferior fuel, and that it cannot be burned effectively in furnaces. My personal experience with wood for do-

mestic heating convinces me that there is no fuel which equals it for steady delivery of heat as a result of continuous combustion, and that the management of a furnace burning wood is in all respects simpler and more satisfactory than the management of a furnace burning hard or soft coal or crushed coke.

I first became acquainted with the possibilities of wood, where continuous heat is demanded, in the severe winter of 1917-18. Previously I had thought of wood as fuel which may be burned by persons who cannot buy coal and who are willing to content themselves with fuel which must be fed into stoves often, only to deliver fluctuating heat.

I was caught short of coal, at my farm residence, by a heavy snow which fell early in December. As an emergency measure, to avoid having to close the house, sheet-iron camp-stoves were installed. A woodpile which reflected the results of cleaning up a neglected woodland on the place, by hauling the dead and down timber out for safety from fires, was available. The snow did not melt till the middle of February. It was supplemented by several additional falls of snow, and the mercury was below zero almost every night or every night while the snow was on the ground. Hauling coal was impossible.

By burning logs as large as the stove doors would permit, the residence (a small, old-fashioned, log farmhouse, weather-boarded and plastered), was kept surprisingly comfortable. No water pipes were frozen at night, although plumbers were kept busy because of frozen pipes in every city in our latitudes.



ALL THE WOOD FOR THE FARMHOUSE WAS PERSONALLY SAWED AND SPLIT—WITH MORE FUN AND BENEFIT FROM THE EXERCISE AND IN LESS TIME THAN IS CONSUMED BY THE AVERAGE GOLFER IN PURSUIT OF THE ELUSIVE SPHERE

The camp-stoves replaced an anthracite hall stove and grate fires. It was found that the wood-burner, which supplanted the "base burner," in which at different times anthracite, crushed coke, and soft coal had been used, required less attention than the "base" burner, which cost eight times as much and required occasional relining at expense greater than the cost of a wood stove.

I personally chopped, sawed, and split, when splitting was necessary, every log burned in three camp-stoves and in the open wood fire which was burned for cheer in the evening. The chopping and sawing provided exercise requiring less time than a golf player consumes and it answered the question, often asked; Doesn't it require one man's time to prepare enough firewood to keep a farmhouse warm?

It doesn't.

When a pipeless furnace was installed in the farmhouse I regretted the prospect of giving up burning wood. The establishment which installed the furnace said it would burn "wood or anything," but did not recommend relying on wood in cold weather. Coal was burned the first winter.

Last winter I decided to try wood in the furnace during October, setting November 1 as the time at which to begin using coal. The coal was laid in early. By November I had learned that wood, at least in temperatures not lower than those of crisp autumn weather, was burned much more easily than coal, in a furnace designed for coal. Becoming interested in its possibilities in colder weather, and continuing personally to saw and chop the wood, I ran the furnace through the winter of 1921-2—a mild winter, yet one during which every farmer had an opportunity to fill his ice-house with four-inch ice.

Between October and mid-April the ashes were removed from the ash receptacle at the bottom of the furnace only five times, as against the necessary removal of coal ashes about twice a week. There were, of course, no clinkers, as against clinkers formed frequently when coal is burned, and requiring for removal considerable

vexing labor. The furnace did not go out for lack of proper draft, as coal furnaces do sometimes when the weather is mild. It did not go out at night once during the winter, after being "banked" with logs as large as the fire door permitted and short enough to fit easily in the firepot.

Cold nights two logs laid side by side and a third one on top never failed to burn till next morning, keeping the house fairly warm, about 60, with the draft entirely off. A few minutes of full draft before breakfast raised the temperature to 70.

As a rule, this furnace was banked at about 9 o'clock in the forenoon, less often an hour earlier. In mild weather it often was not necessary to give it any atten-

tion till night-fall. In colder weather wood was supplied in the early afternoon and again at night-fall. In mild spring weather — when operating a coal furnace sufficiently low to prevent overheating a residence and without its going out is difficult — one slightly seasoned black walnut log, cut green the previous summer, could be relied upon to burn steadily



A WOODPILE REFLECTING THE RESULTS OF CLEANING UP A NEGLECTED WOODLAND ON THE PLACE WHICH FURNISHED FUEL TO KEEP THE LOG FARMHOUSE COMFORTABLE IN AN EMERGENCY

for twelve hours without attention. In some instances it burned longer.

Varieties of wood used included well-seasoned locust, green apple wood, seasoned honey locust, green beech, green mulberry, green and seasoned cherry, and partly seasoned walnut. All wood used was from the farm, which has been a small farm for several generations. No wood was burned save dead and down timber or green wood from trees which for one reason or another were cut necessarily or trees blown down by storms.

Wood in the furnace was found in all respects preferable to coal. Perfectly green wood burned readily, steadily, and with the delivery of all of the heat desired. Well-seasoned locust burned somewhat more rapidly, producing great heat in proportion to the quantity of fuel.

A demonstrated advantage of wood as furnace fuel in farmhouses was the fact that if there is no man about



IF TEN PER CENT OF EVERY AMERICAN FARM WERE A WOODLOT—10 ACRES OUT OF EACH 100—GROUND BEING SELECTED FOR THE PURPOSE WHICH WAS NOT ARABLE, EVERY FARM WOULD PROVIDE ITS OWN FUEL CONTINUOUSLY

the house when fuel must be put in the furnace, a few light pieces of clean wood left for such use in emergencies may be fed into the furnace by a woman or a child, to whom shoveling coal into a furnace would be difficult and disagreeable.

Wood has not been burned regularly in the farm residence, but for a decade it has been burned regularly in a tenant-house on the farm, only dead and down or destroyed trees being used as fuel. The farm comprises only 87 acres and the farmhouse is more than 87 years old.

If 10 per cent of every American farm were a woodlot—ten acres of every 100—and the woodlot upon ground which would not be arable, every farm would provide its own fuel continuously. The labor of sawing wood is avoided easily by use of power saws. If fuel were grown as a crop customarily, neighborhood power saws would serve. It would not be necessary for each farmer to own a sawing outfit.

If every farm had a woodlot, perpetually maintained, the abundance of forest would perpetuate bird life, without which fruit-growing and agriculture must suffer greatly, relying upon artificial and uncertain methods of protection from insect pests.

Removal of the pressure of one-third of the demand for fuel for domestic consumption would affect the coal market favorably for consumers who still must buy coal. Every country home would have real woodland as a recreation ground. Wild flowers would be perpetuated, adding to the joys of country life for all normal persons. The burning of discarded fence-posts and superannuated fruit trees would be, of course, a feature of fuel and woodlot economy.

With public roads lined with trees, as they must be eventually in any civilized country, farm forests would be virtually connected by a continuous line of forest trees. Game conservation as well as conservation of insectivo-

rous birds would be aided. The advantages of the woodlot illustrated would induce farmers to forest unused lands in addition to the necessary woodlot for fuel. Eventually neighborhood timber supplies for building would be restored. The movable sawmill, a former neighborhood facility, would be revived. Freight cost on timber and lumber for farm construction would be eliminated, with benefit to farm consumers and possibly to other consumers.

Upon my small farm of 87 acres, use of wood in farmhouse and tenant-house this year saved, roughly, \$200, or more than one-third of the average net return upon the average farm of 100 acres under present conditions. If ten acres of woodland on each 100-acre farm would supply fuel continuously, would not the ten acres under trees be as regularly profitable as any ten acres on the farm?

Assuredly the farm woodlot and fuel grown as a crop deserve consideration in any scheme of practical farming. The fire chambers of coal furnaces are not well adapted to wood burning, but furnaces built especially for wood easily could be supplied if growing fuel were made regularly a feature of general farming.

BIG BUSINESS HELPS

The Remington Arms Union Metallic Cartridge Company, Bridgeport, Connecticut, is now following the plan of placing printed slips urging the prevention of forest fires in boxes of Remington loaded shotgun shells going out from the company's ammunition works. Since the company's annual production of shells runs into many millions it can be appreciated that the insert will have good circulation. The company changes the copy of these fire prevention inserts from time to time for variety. This is an example of good co-operation on the part of big business in the vital matter of prevention of forest fires.

"Advancing Forestry in America"

In the January number of *AMERICAN FORESTRY* there appeared an editorial entitled "Advancing Forestry in America." This editorial has elicited much comment, and, believing that the readers of the magazine will be interested in the tenor of this comment, the letters printed below are presented:

BY ARTHUR CAPPER,
Senator from Kansas

I want to commend you upon the editorial "Advancing Forestry in America," which appeared in the January number of *AMERICAN FORESTRY*, and assure you that your suggestions have my hearty approval.

You have, indeed, taken a most rational position on the forestry situation as it exists today. Every real American is, or should be, vitally interested in a permanent national forestry program, and while all may not agree as to the means, we are all working for the same end. With our rate of lumber consumption greatly exceeding the marketable timber growth, we must adopt a constant program and adhere closely to it.

Secretary Wallace, in his annual report, has given five excellent suggestions for a beginning, and if, during the coming year, they can not only be adopted, but vigorously enforced, the solution to many of the forestry problems of our country will have been found. Much land in this country now standing idle and worth little or nothing for other purposes should be producing lumber; it is imperative that prompt steps be taken to put this land to use. Nor can we be unmindful of the need for precautionary measures in protecting the growing trees before they reach the logging stage.

I am deeply interested in this work, and will do everything I can to aid in the adoption of the program outlined by Secretary Wallace, as contained in the January editorial. I sincerely hope that by hard work and co-operation success may be achieved.

BY BERTRAND H. SNELL,
Congressman from New York

I have read with much interest and pleasure your editorial in the January number of *AMERICAN FORESTRY* on the subject of "Advancing Forestry in America."

As you know, I have given considerable time and study to this proposition and I most cheerfully approve of your position on this question, and the clear and concise way you place it before your readers. Never in our history as a nation have the conditions been as propitious for mapping out a definite forestry program as at present. The main features of the future policy of this country toward our forests and their products, as outlined by a bill introduced by myself and before the Agricultural Committee of the House, are agreed to by all. The land-owner, the manufacturer, the consumer, the various State departments and Federal Government are nearer together today than ever before, and I trust we

can get this agreement into concrete form in the near future.

We all want to protect the forests we now have and provide for the future needs of our people within the confines of our own country. This can be done very easily if all the friends of conservation will work for the main features of a definite policy and forget the minor details that in the end will take care of themselves.

You are doing a good work and I congratulate you on it. Let it continue.

BY JOHN W. BLODGETT,
President, National Lumber Manufacturers' Association

Your editorial on "Advancing Forestry in America," which appears in the January number of *AMERICAN FORESTRY*, suggests the only way in which constructive work toward the solution of the forestry problem can be made effective at the present time.

It has been demonstrated that Congress will not go any further along forestry lines than the plan so clearly outlined in your article, which quotes the recommendations made by Secretary Wallace in his annual report for 1922. These recommendations are concurred in by everybody who has studied the forestry question, and in the judgment of many of the leading foresters, if enacted into law and successfully applied in actual practice, will well-nigh solve the problem of providing a timber supply for future generations.

BY RALPH S. HOSMER,
President, Society of American Foresters

In the editorial in the January issue of *AMERICAN FORESTRY*, entitled "Advancing Forestry in America," the plea is made that the five objectives outlined in the annual report of the Secretary of Agriculture for 1922 be made the forestry program for the coming year. With this suggestion it would seem that all who desire a rational expansion of our National Forest policy ought to be in hearty accord. Looked at from the practical standpoint of actually getting something done, the common sense of the proposed program makes a strong appeal.

Without exception, every one who has given any thought at all to the bringing of our forests under proper management knows that prevention of fire is the cornerstone of the whole structure. We have made rapid progress in the last decade, but in few parts of the country have we as yet achieved adequate protection. The benefits that result from Federal and State co-operation in

[Continued on Page 122]



The grading and sorting table at one of the fifteen Weyerhaeuser manufacturing units. Here the lumber is graded, regraded, checked, inspected and sorted by men with years of experience and training. Weyerhaeuser thoroughness makes for uniformity in grades.



This alley in the storage and drying yard of one of the Weyerhaeuser mills gives an idea of the immense quantities of lumber accumulated by this organization to take care of the needs of its customers. The higher grades are protected in storage sheds.

The Importance to Industry of Uniformity in Its Lumber Supply

THE industrial concern, hampered in one or more of its operations by a lack of uniformity in its lumber supply, will find it worth while to inquire into the service the Weyerhaeuser organization is rendering to a wide variety of industrials.

This service insures a constant supply of lumber, uniform in grade, car after car. The tenth or hundredth car is like the first. The first car in the type of wood and in the particular grade best fitted to meet the requirements of the buyer.

Such a service reduces operating costs in many ways. Production is not hampered through lack of the right kind of lumber. There is no unnecessary wastage of lumber. Handling costs are reduced.

In short, the user is able definitely to standardize lumber practices and factory operations.

THE Weyerhaeuser organization has for years studied industrial lumber needs. It has found that the best way to serve American Industry is to help a group of permanent customers find the wood best adapted to their requirements; and then to keep them supplied with the exact type of lumber in the correct grade, size and quantities they require.

Such a lumber service is made possible because of the timber resources, specialized

equipment and highly-trained personnel of the Weyerhaeuser organization:

A large supply of mature timber of fifteen different species, and many types within these species, sufficient for decades of cutting.

Scores of logging camps guaranteeing a steady stream of suitable raw material.

Fifteen complete modern manufacturing units.

Seasoning processes that prepare lumber scientifically for each exacting need.

A crew of men at all the plants, with years of experience in producing, grading and shipping Weyerhaeuser quality lumber.

A corps of salesmen trained to think as purchasing agents and buyers have wished for lumber sellers to think.

Distributing facilities backed by fifteen immense mill stocks and two great strategically located storage plants.

EACH year more and more concerns are finding what this type of lumber service means in standardizing their lumber practices and factory operations.

The Weyerhaeuser Sales Company distributes Weyerhaeuser Forest Products through the established trade channels. Its principal office is in Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 4th and Robert Sts., St. Paul; and with representatives throughout the country.

WEYERHAEUSER FOREST PRODUCTS SAINT PAUL • MINNESOTA

Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



THE PASSING OF THE PINEY WOODS

By R. D. FORBES

An article appearing in the March, 1923, issue of American Forestry Magazine and setting forth in an intensely interesting way the sweeping changes which are taking place in our southern forests and their influence upon the social and industrial development of the South and upon the price America will pay for its lumber in the future.

This will be the third of a series of special articles which began in January, 1923, issue of the American Forestry Magazine.

Other articles of the series which will follow are:

April—"The Iron Horse of the West," by Bert P. Kirkland
 May—"The Blazed Trail of Forest Depletion," by Gifford Pinchot
 June—"The Long Haul from the Woods," by Earl H. Clapp
 July—"The Land Cry Against the Forest," by P. S. Lovejoy
 August—"The Farm and the Forest," by Henry S. Graves
 September—"Wild Followers of the Forest," by Aldo Leopold
 October—"The Forests of the World," by Raphael Zon
 November—"The Coming War for Wood," by Howard F. Weiss
 December—"Balancing the Forest Ledger," by William B. Greeley

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AMERICAN FORESTRY MAGAZINE,

Washington, D. C.

"Advancing Forestry in America"

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forest fire prevention are too obvious and too well known to need comment. From whatever angle one approaches this matter, he cannot fail to support this part of the program.

There may be well-founded differences of opinion as to how far public ownership of forests is desirable in the long run, but nearly every one agrees that the minimum limit is as yet far from having been reached. Therefore, whether it be the inclusion in National Forests of additional areas of non-agricultural and otherwise unproductive land by transfer from the remaining public domain in the West, or by the acquisition, through purchase, under the Weeks Law, of privately owned forest lands in the East, these items on the program are ones that command support. Personally, the writer is in favor of decided increases in all forms of publicly owned forests—National Forests, State Forests, community and town forests, together with catchment acres owned or controlled by quasi-public corporations like municipal water companies. Even small public forests, if rightly handled, are the best incentives to the practice of forestry by private owners in their neighborhood that can be devised. The time is ripe for

extending our National Forest area. By all means let this be one of the planks in the program for 1923.

One of the basic principles of forestry is to hold down the cost of all forestry operations. For this reason, wherever it is possible to do so, the forester works to regenerate the forest through natural reproduction. But there remain many areas where planting is essential if a forest of valuable kinds of trees is to be obtained. To facilitate forest planting thus becomes one of the duties of the State. There has been a wonderful advance in interest in forest planting in the Northeast in the past few years. Systematic and well-directed encouragement can easily make this a nation-wide movement. It is another item in the program that deserves unqualified support.

Under all sound programs of forest management, there must be the solid foundation of knowledge of the fundamental laws governing the growth and development of trees and of forests. Equally necessary is it that the business side of forestry, utilization and the marketing of forest products, rest securely on economic laws. Such a foundation can only be provided by careful, thorough, and painstaking research. Forestry is essen-

tially an applied science, but it requires that behind the practical application there shall be a great store of exact, scientific knowledge, such as can only be built up through research. America is in the process of developing methods of silviculture and of forest management that are adapted to the particular and individual needs of this continent. We can gain suggestion and inspiration from Europe, but we must develop our own systems of practice at home. And because forestry in the United States is still in the formative stage, we need now, perhaps more than at any other time, that provision be made whereby forest research can be undertaken and prosecuted in a truly adequate manner.

That the program proposed for this year covers but a part of the work that waits to be done before this nation is assured of adequate, continuous forest production is self-evident. But it is an admirable start toward that goal. Best of all, it is a program on which timber-land owners, large and small, operators, foresters, and the general public can all unite. There is a place in it where every one can take a part. Let every member of the American Forestry Association enter into it and help to give to our country a truly national forest policy.



C. V. MAUDLIN

ASSOCIATION'S NEW BUSINESS MANAGER

MR. C. V. MAUDLIN, formerly Chief of Operations at the U. S. Forest Products Laboratory at Madison, Wisconsin, has come to Washington to take charge of the circulation, advertising, and general business management of the American Forestry Association. Mr. Maudlin succeeds Mr. Herbert McCherry and was selected because of his outstanding achievement in business management and the development of business methods.

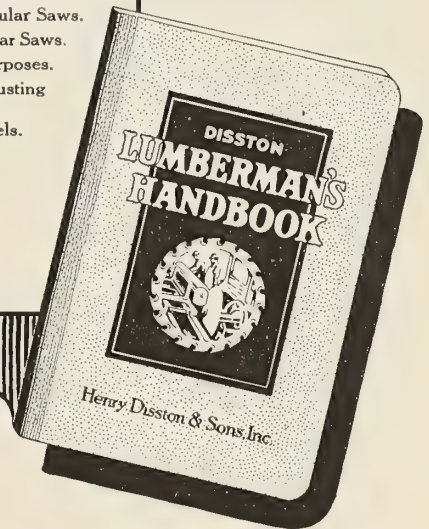
He graduated from Purdue University and, after spending a short time designing concrete structures, he entered the Forest Service. His interest in the development and organization phases of the work were very marked and he was soon placed in charge of the force engaged in testing timber. By systematic time studies he greatly increased the number of tests per person. In this position he put into effect many systems which reduced the amount of work required and at the same time gave increased production.

During the war Mr. Maudlin spent fourteen months with the U. S. Signal Corps as Senior Inspector in charge of airplane inspection in the Chicago District. He systematized the receiving and shipping of airplane parts in such a way that he received the commendation of the army officials supervising this feature of the work.

After the war he returned to the Forest Products Laboratory and developed and put into effect systems for recording the progress of work and for controlling expenditures. These systems have proved to be very satisfactory, and since the publication of an article regarding them, similar systems have been adopted by several large commercial organizations. Mr. Maudlin's past record of achievement promises well for the future development of the business of the American Forestry Association.

PARTIAL CONTENTS

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Instructions for Setting and Sharpening Circular Saws.
Tools for Fitting Circular Saws.
Inserted Tooth Circular Saws.
Saws for Special Purposes.
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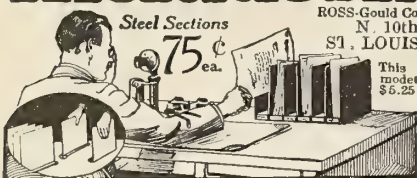
"A vital question in this country, one with immediate importance, but of greater concern still in its relation to the future, is the preservation and restoration of forests."—Nashville Banner.

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LONDON'S FAMOUS MULBERRIES

With reference to the falling late last summer of the famous old mulberry tree at Mildmay Hall, the Macon (Ga.) *Telegraph* gives the following interesting account of some of the famous trees of London town:

This tree, beneath which the Declaration of American Independence was read aloud in 1776—this tree, associated with the successful resistance of a nation to the tyranny of men, has at last been blown down. Brought over originally from Persia, in the sixteenth century, the mulberry has become a characteristic feature of London and the South of England. It readily strikes from a small shoot, and a branch buried deep in the ground will thrive and produce a fruit-bearing tree in a comparatively short space of time. The old mulberry at Mildmay Hall had been propped up by means of every possible device, yet the branches were full of fruit when it was blown down. Mulberries were always planted in the midst of a lawn, that the soft turf might prevent injury to the ripe fruit when it fell. Mulberry and apple pie was a choice luxury in historic times, and many allusions to this dish are to be found in old books.

Mildmay Hall attained notoriety in the reign of Charles I, when its owner, Sir Henry Mildmay, married the daughter of a city alderman. From thence onwards it has been associated with progressive movements, both social and religious, and has now passed into the ownership of the Young Men's Christian Association.

Yet another famous London mulberry tree stands in the grounds of Vane House, Greenhill, Hampstead, where Sir Henry Vane once lived, and where is still to be seen the old dining hall, with great baseless pillars down the center of the room, supporting what must have once been a fine ceiling. This mulberry tree is in fine preservation, and the effect of the sunlight through its dark green leaves, checkering the lawn, remains today as it must have been in the times when Vane and Cromwell were still friends and the cause of English liberty about to be put to the sword. It is curious that this link of the mulberry tree should exist between the English and American struggle for independence.

Yet another mulberry tree still stands in Chelsea, and is associated with Nell Gwyn, while another is to be found in the old precincts of the Charterhouse, that famous school which figures so frequently in Thackeray's writings, and which has trained so many famous men. The Charterhouse was originally a monastery, as its name implies, and was founded by Sir Walter de Marney in 1371, but upon the dissolution of the monasteries in the reign of Henry VIII, it was put up for sale. In 1611 it became the property of Sir Thomas Sutton, who established the well-known school. The mulberry stood in that por-

tion of the school which was associated with pensioners, the free scholars—and was sold with the old buildings to the Merchant Taylors School, when the Charterhouse, having outgrown its old premises, was transferred to Godalming in 1872.

Last, but not least of the London mulberries, may be mentioned one which has stood for centuries in Whitechapel, in a street down which Shakespeare is said to have passed when on his way to the Globe Theater.

"Again let me congratulate you upon **AMERICAN FORESTRY**. I love it, the cover is most artistic in color and design, and the illustrations, so well arranged, are very pleasing and altogether satisfactory. It should be read by every one and I never lose an opportunity to show it to my friends."—Mrs. W. F. Crummer.



A LIVING TREE TOWER

At Camp Meeker, a summer resort in Northern California stands a novel tower of four mast-like redwood trees that stand about 15 feet apart in a nearly perfect square. These trees have been joined by cross-beams upon which floors have been laid. There are seven floors to the tower and each floor is surrounded with a balustrade to prevent the danger of falling off. The trees have been topped off even with the balustrade of the top floor. The trees are about 100 feet high and have short, leafy branches from top to bottom, but they are not very thick. A novel sensation is experienced by those who are at the top of this tower on a windy day because of the swaying of the trees.—H. E. Zimmerman.

INFORMATION FOR MOUNTAIN TRAVELERS

A new map and recreation folder of the Columbia National Forest, located in Southern Washington, has been issued by the Forest Service. The map shows all the roads, trails and resorts on the forest and also as a special feature, shows in red the area of the old burns where care with fire is especially necessary, in particular, the Yacolt Burn of 1902 which covered 350 square miles. This area is now covered with young second growth, which if destroyed will have to be replaced by artificial planting at immense cost to the government.

As Mt. Adams, St. Helens, Spirit Lake and Government Mineral Springs are all within the Columbia National Forest, the folder will be of use to the large number of automobile campers and hikers who annually visit this region. Besides the map the folder contains eleven pictures of scenes of special beauty and interest, including the Wind River Forest Experiment Station and Nursery where about one million trees are grown each year for transplanting on denuded areas of Washington and Oregon. The Experiment station is well worth a visit. The tourist will find also a helpful list of rules for the prevention of fires, a suggested outfit for campers, and the hunting and fishing regulations of Skamania and Klickitat Counties which are partly within the forest boundaries.

The folder may be obtained from the District Forester, Post Office Building, Portland, Oregon, or from the Supervisor of the Columbia National Forest, Portland, Oregon.

TEST WESTERN WOOD

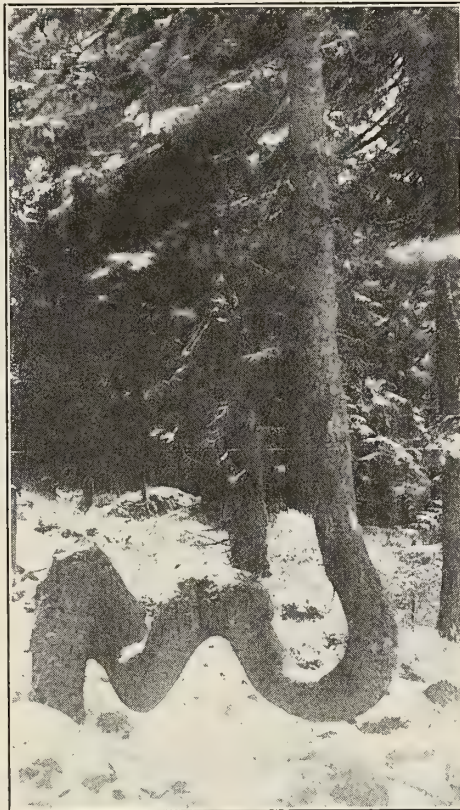
The Forest Products Laboratory of the Forest Service at Madison, Wisconsin, will make strength tests on Douglas fir structural timbers in co-operation with the West Coast Lumbermen's Association and the National Lumber Manufacturers' Association. The Douglas fir test material will be collected in the Columbia River, Coos Bay, Puget Sound and Grays Harbor regions. The collecting will be done by C. W. Zimmerman of the Forest Service Timber Testing Laboratory of Seattle; C. J. Hogue, manager of the West Coast Products Bureau, and D. F. Holtman, Construction Engineer of the National Lumber Manufacturers' Association.

District Forester Cecil stated that while the Forest Service has made over one-half million strength tests on the commercial woods of the United States, only meagre information is available on the strength of wooden columns. With the recent installation of a testing machine of a million pounds capacity, large wooden column tests are for the first time possible in the United States. A wooden column thirty feet in length is readily accommodated in the

capacious jaws of this huge machine and this giant of wood breakers will test the strength of horizontal beams and girders with a length of eighty feet.

The purpose of the study is to secure data on the strength of wooden columns and the effect of defects and drying on wood when used as a column. Such data is needed in the preparation of lumber grading rules and establishing of safe working stresses. Foresters believe that the tests will show that it is practicable to use smaller columns or lower grade material of the same size, which would mean a substantial saving of material.

Forest officers say that the timbers selected will be of both good and poor grades and will vary from light fast-growing to heavy slow-growing woods. Douglas fir, the principal commercial tree of Oregon and Washington, may be considered the most important of American woods. Though ranking second in point of production, it has a comparatively wide distribution, and the great variety of uses to which its wood can be put, places it first and as a structural timber it is unsurpassed.



(The Gilliams Service.)

NATURE FREAK, "THE CAMEL TREE"

This strange, grotesquely shaped tree grows in the Hartz Mountains of Germany and is supposed to be the star specimen of unnatural tree shapes. Residents call it the Camel Tree, and picknickers make use of its humps as convenient camp stools. It has been suggested that the shapes of Middle European pipes, with their bewildering twists and curves, are modeled after this tree.

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CAMPERS HEAD LIST OF FIRE CAUSES

Nearly six thousand forest fires were started on the National Forests of the country in the year 1921, is the statement of Chief Forester William B. Greeley in his annual report.

One-fourth of these fires were caused by lightning and one-third are directly attributable to the carelessness of campers. Brush-burners, lumbermen, incendiaries, and railroads are responsible for the bulk of the remaining fires.

Over 375,000 acres of National Forest land was burned over, with a total damage of more than \$200,000. The cost to the nation for fighting these fires amounted to \$532,811.

The 1922 fire season in Oregon and Washington has been the most severe in some years. The usual May and June rains failed, and fires set to clean up slash on private lands burned on into the danger period, with resulting great losses to property and growing timber.

Outside of the Pacific Northwest the season has so far been somewhat more favorable than 1921, with the exception of a late period of hot "fire weather" and unusual hazard in California. There have been comparatively few lightning fires, and this has meant absence of the "bunching" of fires, which has so often proved to be more than the protective force could handle.

The total number of man-caused fires rose from 2,996 to 4,400, and was only 4 per

cent less than in 1919, as against 35 per cent less in 1920. The marked increase in fires caused by campers, brush-burning, and incendiaryism is disturbing. The Forest Service has made every effort possible with its available funds to reduce the number of these unnecessary man-caused fires through educational and law-enforcement work. There is urgent need for additional preventive work, without which the task of protection is in danger of becoming steadily more difficult and costly.

"PINES THAT COME BACK," NEW FARM FORESTRY FILM

Suggestions on forestry for the sandy-land farmer on the Southern Coastal Plain are embodied in "Pines that Come Back," a one-reel motion picture made for the Forest Service, with the co-operation of the Maryland State Board of Forestry, and recently released by the United States Department of Agriculture.

This picture concerns the problem of a farmer with a sandy field on which there is a stand of young pine. He has decided to clear it, but the State Forester tells him that the land will pay him better in pine than as plow land—and proves it. A personally conducted trip through neighboring forests that are proving profitable on lands worthless for field crops serves to convince the farmer that the Forester is right.

"Pines that Come Back" includes a comprehensive series of scenes illustrative of the growing, handling, and utilization of Loblolly

pine. While directly applicable to the eastern shores of Maryland and Virginia, it should be of value in a large area of the South, where soil conditions are similar to those found on the Eastern Shore.

WIDESPREAD INTEREST IN REDWOOD CAMPAIGN

Upon his return from the East, J. D. Grant, of San Francisco, Chairman of the Board of Directors of the Save the Redwoods League, reports that interest in the movement to save California's gigantic trees is steadily increasing among influential people and organizations.

While in New York, J. D. Grant conferred with Madison Grant, author of "The Passing of the Great Race," and one of the pioneers in the Save the Redwoods movement, regarding the plans for carrying on further work of the League.

"There are indications of constantly increasing interest in the movement throughout the East," said Mr. Grant.

"Continued publicity is being given to our attempts to save the redwoods through metropolitan newspapers and magazines with large national circulation. We have secured the unanimous support of conservation societies throughout the nation, as well as the various automobile and tourist associations. People are awakening to a realization that California Redwoods, one of the marvels of the world, must be saved now or perish for all time."

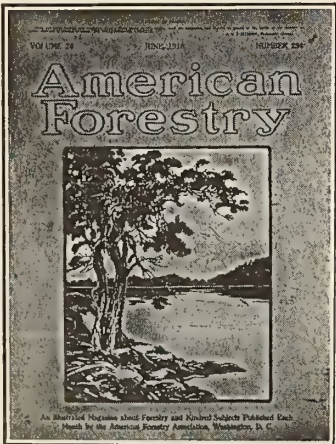
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CANADA TO HAVE IMPERIAL FORESTRY CONFERENCE

The Dominion Government has finally decided to hold the second Imperial Forestry Conference in Canada during the last week of July, writes Ellwood Wilson, and has voted the money for this purpose. The invitations to other countries in the Empire have been issued, and it is expected that about thirty or forty delegates from overseas will be present. It is probable that an organization meeting will be held in Ottawa, trips will then be taken to various points of interest to forests in the East. A week of conferences will then be held in Ottawa. A trip will then be taken to the West coast where the Conference will break up. If this Conference is as successful as the initial one held in London in 1920, it will be of the greatest benefit to the Empire in general and to Canada in particular.

A NEW CAMP FOR BOYS

A forestry camp for boys is to be opened on July 1, 1923, in the Lake region of Northern Wisconsin. It is to be called Camp Mishike (The Turtle) and will be located on the camp property of sixteen hundred acres on Mishike, Rock and Rainbow Lakes, in Vilas County, Wisconsin.

Dr. Hugh P. Baker, former Dean of the New York State College of Forestry at Syracuse University; Warren B. Bullock, former director of Extension in the same college, and W. E. Sanderson, for four years Director of the Summer Camp of the New York State College of Forestry, have associated themselves in an enterprise for the development of outdoor camps and schools. Under the supervision and direction of such well-known leaders in outdoor life, the success of the new camp is assured.

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AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

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VOLUME 29

March, 1923

NUMBER 351

Passing of the Piney Woods

Wild Life and Wildfire

Bird Migration

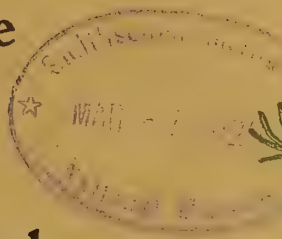
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IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watersheds; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1919 shows our forests annually supply over two billion dollars' worth of products; employ

755,000 people; pay \$773,000,000 in wages; cover 470,000,000 acres not required for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

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AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

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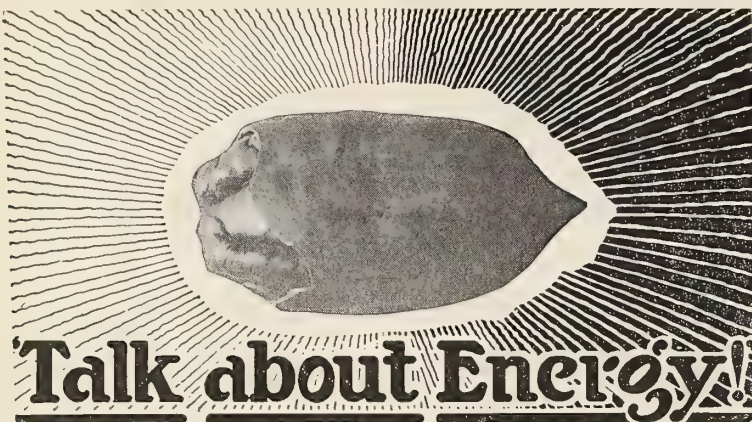
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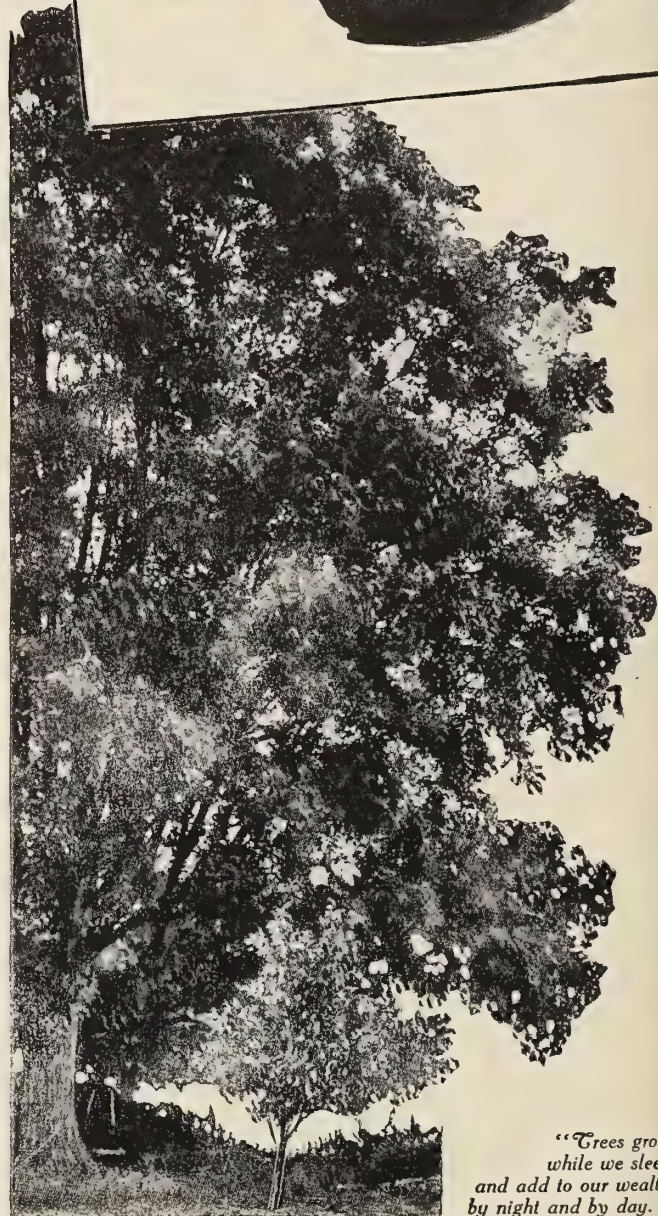
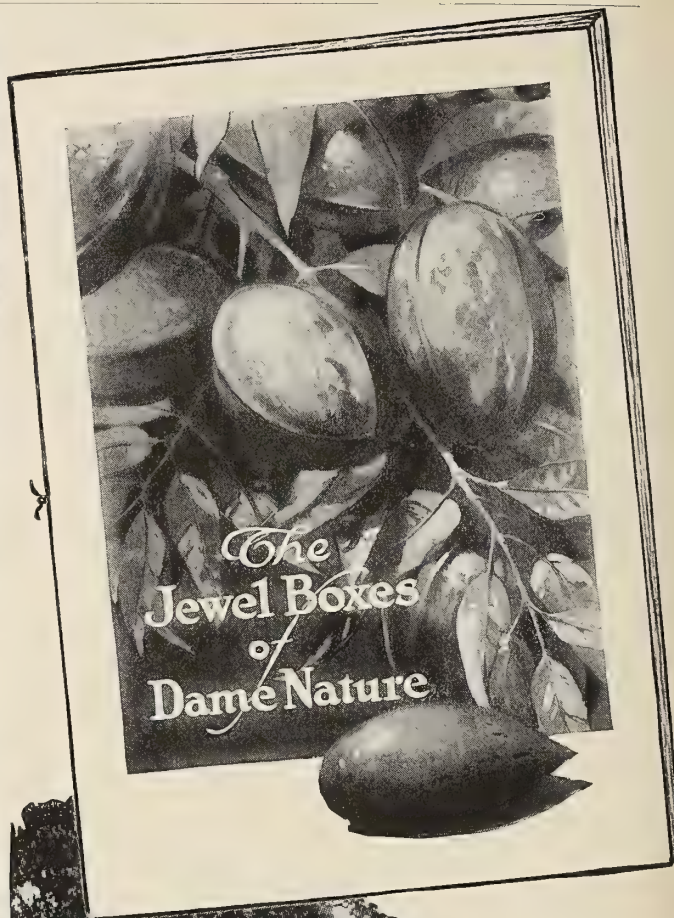
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AMERICAN FORESTRY

VOL. 29

MARCH, 1923

No. 351

The Passing of the Piney Woods

By R. D. FORBES

IT was a chilly day in December—even in the South it can be chilly sometimes—when I swung off the train at a little Southern town that shall be nameless. The last time I had come through Nameless Town the train had stopped for several minutes, while a dozen or more traveling men, prosperous-looking mill-folk, and here and there a farmer, left the train and pushed their way through the small crowd on the platform, only to have their places in the coach taken by about the same number of new travelers. After the steady rumble of swiftly turning wheels and the rush of soft night air past the open window, I had had for an instant a strangely metropolitan feeling. Here one was in the midst of a laughing, noisy throng, shouting welcomes and farewells; lights blazed along more than one street, echoing to the fall of many feet; and in the distance there was the whir of machinery, the sharp escape of steam, and the creak that is made by just one thing in the world—the bull-chain that hour after hour lifts the logs in ponderous procession to the log deck of the modern sawmill.

All this came vividly back to me as I watched my train pull out on this new day. It had not stopped long. A small roll of city papers, a basket of bread, and a

package or two were all that had come out of the baggage car for Nameless Town. I picked up my grips and turned to catch a taxi to the hotel. There was no taxi. "Where's the best hotel in town, friend?" The

baggage man, trundling a lightly loaded truck past me, jerked his head in the direction of the large frame building across the street.

Thoughtfully I followed the curt instruction and was soon entering the lobby. I turned to the desk to register. There was neither register on the desk nor smiling proprietor behind it to whom I might make known my wants. The room was utterly deserted. In fact, so seemed the entire building. It was only when I had listened carefully that I heard the sound of conversation at the opposite end of a long corridor. Down the corridor I went and tapped on the door beyond which were the voices. They stopped, and when the door was opened by a rather seedy-looking man, evidently just risen from his meal, there was obvious surprise on his face.



THE PINEY WOODS PASS

While you read this article the piney woods are cashing in one hundred acres of beautiful timber. During the last decade thirty million acres of southern forests have been cut, almost one-half of which has passed into the waste-land category.

"Can you let me have a room to change my clothes in?" I asked him. The man exchanged glances and a low word or two with his wife, while the children of the family stopped eating and gazed at me round-eyed.

"Reckon we got room, all right," he said. "Where's



THE OLD PINEY WOODS OF THE SOUTH

"One must look upward to old trees!" sings Mary Brent Whiteside. Worthy of song and reverence indeed are these beautiful columns of the forest temple. But they must pass, for you and I need homes. But mark you well the manner of their passing.

your bags? I'll show you the way."

He led the way upstairs without even offering to relieve me of the suitcase that banged alternately against my shins and the balustrade. Another long corridor, as chilly as the grave. As we passed door after door, standing ajar, I saw dismantled furniture covered with dust. The room at which we finally stopped was little better than the rest, except that there was a bowl and a water pitcher on the washstand, and a mattress, although no linen, on the bed.

"Make yourself at home," said my guide. But when I asked if he could give me dinner he shook his head and told me that there was a restaurant "uptown."

THE PALSIED AIR OF NAMELESS TOWN

Uptown I went, when I had gotten into a flannel shirt and some high boots. I went unwashed, for there had been only cobwebs in the water pitcher and not a towel in sight. As I walked I eyed the stores curiously. The big plate-glass windows of the "company store" were boarded up. The news-stand still bore the advertisements of the metropolitan dailies, but plainly not a paper had been sold over its counter in months. Dust whirled in little eddies around the billboard of the moving-picture theater, and drearily flapped the fading poster of a long-departed Chautauqua. On the barred door of the town bank was a laconic sign—"Closed." The wooden hand that pointed up the adjacent stairway to the Chamber of Commerce looked strangely palsied and lifeless. A little farther on was the village drug-store. It was more or less completely converted into a garage. The "general merchandise" emporia at the next corner announced closing-out sales, and their jumbled stocks looked in need of such disposition.

By this time depression had settled upon me, and when I finally reached the promised restaurant I was in no mood to argue over the lack of "Fresh oysters received daily," "T-bone steaks," "Shrimp, all styles," and other delicacies listed on the dingy sign over the long mirror.

"Well, if ham and eggs are all you've got, shoot 'em to me," said I. When they arrived I thought it opportune to ask some questions. With the answers came enlightenment.

No wonder the hotel was empty, the bank closed, the stores out of business; for on the other side of the railroad, down by the wide pond that once had held beautiful, fine-grained logs of Louisiana longleaf pine, the big saw-mill that for twenty years had been the pulsing heart of what was now Nameless Town was

already sagging on its foundations, its boilers dead, the deck stripped of all removable machinery. A few ragged piles of graying lumber were huddled here and there along the dolly-ways in the yard where for years lumber had been stacked by the million feet, waiting to be sent into thirty states and half the countries of the world.

The mill had "sawed out"—had cut its last log six months before. Within the town, grass was beginning to grow in the middle of every street, and broken window lights bespoke deserted houses. A discouraged principal and two teachers taught shrunken classes in the big school

Farther out, near the end of the tram lines and in the earlier cuttings, the cut-over lands were dotted here and there with the smaller trees of the original stand, which, in spite of fire, cyclones, and all the enemies of our southern forests, still held up sturdy heads in promise of a future generation of pine trees, if mankind would only give them a chance. As it was, the relentless sweep of annual fires had kept those acres as bare as the day they were logged.

Now I do not tell this tale, by way of introduction to a brief description of the passing of the pineries of the



A NIGHT SCENE AT A SOUTHERN PINE MILL TOWN

When the last whistle blows at a large southern sawmill, announcing that the piney woods within its radius have passed, the average mill town forthwith goes upon the rocks. If the yearly production of southern pine declines to eight billion feet, as predicted, nearly a quarter of a million carloads of lumber freight—an amount sufficient to build a quarter of a million homes—will be lost annually to the southern railroads.

building, and such of the older boys and girls as were left took the train daily for the nearest high school, fifteen miles away.

THE ONE PROMISE OF A FUTURE GENERATION

That afternoon I explored on foot some of the cut-over lands that stretched wearily away from the rusting rails of the main-line tram. Those nearest the mill, which had been cut last or had been gone over a second time during the recent era of high prices, were desolate indeed. Not a living pine tree remained on acre after acre. The extraordinary demand for every available stick of timber for "reconstruction" after the war, the pitiless system of taxing annually every board foot in standing trees, and the sweep of slash fires had done their work.

south, in order to be sensational. Alas, even if I wished to, I could hardly move the readers of AMERICAN FORESTRY with a description which long since became a commonplace to the thoughtful students of our forest industries! There will be scant material in the columns which follow for the salesman of West Coast lumber to quote in his next interview with the retailer in New York, Chicago, or any other great industrial center where southern pine and Douglas fir are in competition. I tell of Nameless Town merely because in the lonely streets of that vanishing community and in the bleak stretches of stump land which surround it I read a lesson which no statistics of southern pine stumpage still available or hints of future inroads of substitutes for lumber can ever efface.

"THEY SHALL NOT PASS"

Neither I, nor any other man, knows when the piney woods of the south—I mean now even the virgin piney woods—will pass utterly. If we accept as correct the estimates made three years ago by a powerful association of southern manufacturers, we had in the piney woods on July 1, 1919, two hundred and sixty billion board feet of standing timber, virgin and second-growth. That is a supply which ought to last not less than twenty years at present rates of consumption. Further, no one will deny that there are pine mills now existent in the south which have before them operations which will last fifteen, twenty, even twenty-five years, on virgin stumpage alone. Again, Government estimates in 1920 placed the area of virgin pine timber from Virginia to Texas and up to southern Missouri at as vast a figure as twenty-three million acres, or an area a fifth greater than that of South Carolina. Added to that, as potential sources of merchantable second-growth, although often in light stand, the Forest Service says we have in the south about sixty million acres of land coming back to pine after past cuttings.

Let us grant all of these statements. Let us accept them, and let the forest conservationists of the south be eternally thankful that we can find in them some hope that, *regionally speaking*, we have not come too late, and that, not lightly, we may appropriate to our use in referring to the piney woods of the south an immortal phrase: "They shall not pass!" But in our gratitude to the blind chance that has given us this hope, let us not blunder along in the incredible folly of thinking that we have in the piney woods no problem crying insistently for solution, no work to do to save vast areas from desolation and hopelessness. Remember Nameless Town.

SAWDUST MONUMENTS, UNWRITTEN EPITAPHS

The plain truth of the matter is that in county after county, in state after state of the south, the piney woods are not passing, but *have passed*. Their villages are Nameless Towns, their monuments huge piles of sawdust, their unwritten epitaph: "The mill cut out!" Locally, the catastrophe has already arrived of a vanished industry, unreplaced by any new industries remotely adequate to redeem the situation.



THE DESPOILER OF THE FOREST

The ungainly-looking machine is one type of the much-maligned steam skidder, the enemy of young timber. It picks up outlying logs and drags them by main force and awkwardness to the landings, giving no quarter to the young trees which chance to be in their path. The scene here shown gives a glimpse of the destruction brought by lumbering with steam skidders.



HOW THE PINES COME BACK

Nowhere is natural reforestation easier than in the southern pineries. The seeds of the pines are light and easily wind-borne. No special seed bed is necessary. On the extreme right is the trunk of the "mother" pine to the saplings below. To the left is second-growth nearly ready for the sawmill.

To understand the situation with regard to the pine lands of the South, it is necessary to know something of the history of the southern lumber industry. Two main facts stand out: First, that the early exploitation of the pineries began on a large scale on the Atlantic coast and has progressed slowly westward; second, that the broad strip of longleaf pine forest bordering the Atlantic and Gulf coasts has, as a whole, been logged at a later date than the shortleaf and loblolly pine lands farther inland. To both these statements there have, of course, been exceptions, for water transport was early taken advantage of, in the west as in the east, to bring out the cream of many pine stands bordering the larger streams near the coast.

The result of the slow progress of the pine industry southward and westward through the Coastal Plain has been to create very diverse conditions in the resultant cut-over lands. To the north, in south-side Virginia and in the piney woods of what is now the Tar-heel State in name only, the early cutting of the bulk of the virgin timber was followed by a splendid second-growth of shortleaf and loblolly pine, and in many places this was succeeded by a third or even a fourth growth.

When lumber was cheap and before the day of the steam skidder, there never was any dearth of small trees left on the land after logging. Such small trees did not

pay to cut, and logging with animals did not break many down. Subsequently these trees bore abundant seed, and except for long-leaf pine, whose large seed the razor-back hog devoured and whose seedlings the hogs uprooted by the millions for their juicy tap roots, reforestation was swift and complete. Agriculture on the better land of the pine belt did not lag far behind the forest industries, and farms, settlements, and roads kept such fires as started from sweeping large areas.

THE BLACK SCOURGE OF THE PINEY WOODS

How different the conditions in the western portion of the piney woods region today, and in those areas of the central portion where railroads have been of comparatively recent development! Here the virgin timber is being cut under market conditions which in the minds of most operators justify cutting down to eight or nine inches on the stump. Here, in one state at least, a few scattered trees per acre are assessed at \$8 a thousand and taxed at rates up to forty and even sixty mills. The tendency in every state is to raise the assessments on all forested and cut-over land. Here the ax and saw long since gained a hopeless lead over the plow, and fires may and do run for miles unhindered by the works of man. (Louisiana and Texas now have fire-protective systems, however.)

The steam skidder takes its steady toll of standing poles and saplings. Fifty years of indiscriminate burning, which evolved gradually out of the careful and sparing use of fire indulged in by the Indians and the early white settlers, here blacken the piney woods year after year. The result is not hard to imagine. Few or no trees are left to reseed the ground (pioneering Louisiana insists under the law on one eight-inch seed tree per acre), and the few are promptly roasted in the ensuing fires in the heavy slash.

It is safe to say that today three-quarters of a million acres of pine land, chiefly in the Gulf Coast States, are annually stripped so clean and then burned so thoroughly as to be incapable of satisfactory natural reforestation within half a century. Some wide areas of it will undoubtedly take more than a century to reforest naturally, even with fire protection. Moreover, some of the second-growth stands that followed early cutting in South Carolina, Georgia, and northern Florida will never reach a sawmill, owing to destructive turpentine at an early stage.

For example, Georgia jumped her output of turpentine from 74,000 barrels in 1919-20 to 171,000 in 1920-21. She did it by entering her stands of small second-growth. An investigator from the Southern Forest Experiment Station combed Georgia and South Carolina for unbled stands of second-growth longleaf and slash pine in 1921. He estimated that 75 per cent of all timber above 8 inches in diameter had been bled. Heavy bleeding in small timber is fatal to a large proportion of the trees, while those that survive fall easy victims to fire when the orchards are abandoned. Such stands will never survive to reach a sawmill.

SOME WRONG CONCLUSIONS

It is these wide differences in conditions attending logging and subsequent to it that can easily lead casual observers into misjudging the prospects for a continued

output of southern pine. Any one who confines his travels in the pine lands to the recent longleaf cuttings in Alabama, Mississippi, Louisiana, and Texas will conclude that when the virgin timber is gone the piney woods will have shot their bow once and for all.

On the other hand, the traveler through the shortleaf pine second-growth to be found further inland in those states, and in the beautiful young forests of lusty slash and longleaf pines in north Florida, southeastern Georgia, and South Carolina, may draw an equally erroneous conclusion that timber is everywhere renewing itself in the southern pineries. The truth lies between these extremes.

If it were sure to lie between them always, the plight of the piney woods would not be so desperate. For example, I have already quoted the Forest Service estimate that in 1920 there were sixty-odd million acres of cut-over pine lands in the south which had reproduced to some kind of second-growth. Roughly, half of this is already merchantable, and lumbering is now going on in parts of it. Having in mind these statements of the Government, which were borne out by its own investigators, the largest association of pine manufacturers in the south not long ago issued a press notice to the effect that an annual output of southern pine amounting to six or eight billion board feet could be counted upon indefinitely. To this statement no forester will take

exception, if it is made with one proviso. Many of us, in fact, would be willing to predict a sustained cut for the next century of at least twice that volume, with the same proviso. *Provided we practice forestry* in the piney woods of the south, southern pine can, with a lapse of only a few years following the exhaustion of the important virgin stands, maintain and even increase its ascendancy in the lumber markets of America and the world.

But, unless we do practice forestry in the south, nothing could be more fatuous than to say that a seven or



BLEEDERS OF THE PINES

It is a common practice in the South to turpentine pine timber for several years in advance of cutting the trees for lumber. In this picture the "scrape" or hardened resin is being removed from the scarified face at the end of the season's operations.

"How the Forest Builds Better Boys"

BY LILLIAN EWERTSON

WE all know that the woods, and the great outdoors, has an appeal to every man, woman, and child. Its silent splendor is felt by all who come under its influence. But few of us stop to analyze the effect which living out under the stars, close to nature, has especially upon the growing boy and girl. Such a mode of living is a tremendous factor in developing uprightness, truthfulness, and four-squareness, along with other virtues. No boy, tramping through the woods, cares to swear when only the sound of his own misconduct echoes through the silence of the woods. No boy will wish to smoke, out where the green things of nature grow, when a lighted match or a finished cigarette care-

lessly discarded may mean the destruction of great spaces of natural beauty. Too much has been said on this subject, education has been sufficiently developed along this line, to permit of any average boy heedlessly doing what

he knows to be wrong.

The more progressive educational institutions, however, are doing more to educate the coming generation to love the great outdoors. They are embarking on new plans for broadening this instruction, so that a greater number may learn of the benefits which accrue



A HIGH BALL

A thrilling moment in a game of volley-ball at Camp Roosevelt. This is one of the most popular outdoor sports at the camp, run for "building better boys."

from living in this wholesome manner.

The Chicago public-school system has inaugurated the most unique plan for this instruction in the development of Camp Roosevelt, the national summer educational-



CHANGING A TRAIL INTO AN AUTO ROAD

Building a road into camp. Just the same as road-builders do. Rock bottom and surfaced with good binding material from a near-by gravel pit.

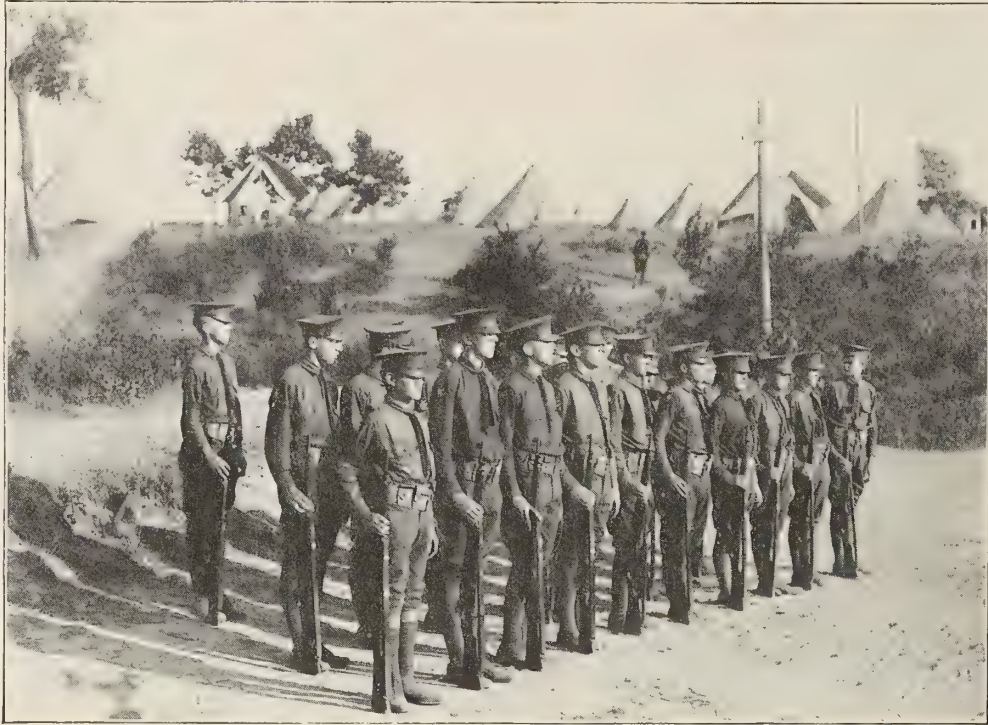
training encampment for boys. This camp is operated under the auspices of the Chicago public-school system, the United States Government lending assistance by detaching officers and lending equipment. Chicago school teachers are behind this movement, and the conduct of the summer school in connection with the camp is very largely in the hands of these teachers.

While the camp is maintained under the auspices of the Chicago school system, it is in no sense of the word a local institution. Boys are attracted from

all over the United States. During the summer of 1922, twenty States were represented among the more than

seven hundred boys who attended the various training camps.

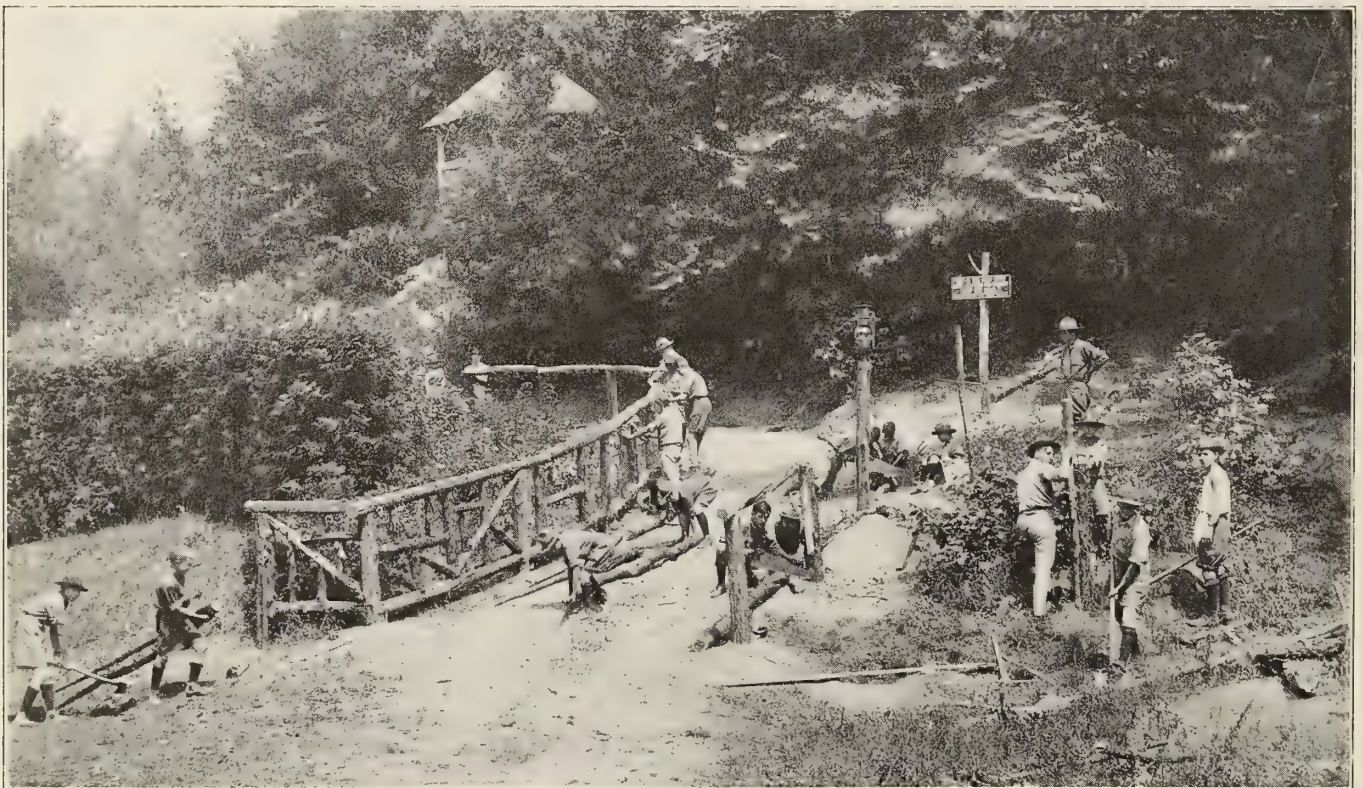
Boys often as young as nine attend the camp, and, through the training in woodcraft, campcraft, and scoutcraft, develop a love for outdoor things that will stay with them all through life. To take a hatchet and knife and go into the deep woods, there, under the careful supervision of nature study experts, to cut down decaying or other saplings and underbrush detrimental to the healthy growth of surrounding shrubbery, to



BUILDING STURDY BODIES THE MILITARY WAY

Under the direction of Major F. L. Beals, U. S. A., who founded the camp in 1919, seven hundred to a thousand boys congregate for the thorough training in better citizenship for which the camp has become famous all over the country.

finish the framework of lean-tos and tepee tents, to cover these with boughs and leaves, furnishes a romantic in-



CONVERTING FOREST WASTE INTO BEAUTY AND USEFULNESS

When the road is finished, a rustic entrance and fence may be built of the broken and dead trees and those that are taken out in thinning, the poorest of trees to be selected for this purpose.



BUSY MAP-MAKERS

Every boy in camp seems to enjoy the making of maps. The summer school at Camp Roosevelt includes all seventh and eighth grade and high-school subjects.

terest to every boy which will enable him to acquire much useful information. It is no unusual thing to see eight or ten boys as busily engaged as so many beavers would be in cutting down timber, building bridges over ravines and small streams. Could anything delight the heart of a boy more than to take a pack containing his blanket, his hatchet and knife, together with his mess equipment, and go into the woods to spend the night. All of these things the Camp Roosevelters do, ever watched, guarded, and guided by skilled experts who add to the camp training a fund of useful information on right outdoor living.

This unique camp, known throughout the country as the "boy-builder," was founded in 1919 by Major F. L. Beals, U. S. A., Professor of Military Science and Tactics and Supervisor of Physical Education in the Chicago public high schools. A great Olympian playground, where boys from all parts of the country could commingle and where they could receive thorough training in better citizenship through a well-defined course, was Major Beals' ideal for many years, and in the establishment of Camp Roosevelt he has included all of his splendid ideas for making better future American citizens. Because of this tendency for effecting better manhood, the War Department of the U. S. Government gave to Major Beals splendid support in the loan of all necessary camping equipment, as well as the assignment of regular army officers and non-commissioned officers for the instruction. The American Red Cross also assigned a staff of doctors and nurses to look after the health and sanitation

of the camp and to give instruction in first aid and Red Cross. The Y. M. C. A. maintains a hut, and ten secretaries are on duty during the entire summer to supervise the welfare and comfort of the boys and to assist in the athletic program.

Where from seven hundred to a thousand boys congregate from many States, and where they range in ages from nine to twenty, it will readily be seen that a program to cover so wide a range must necessarily be well regulated and diverse. For this reason, Major Beals separated the camp into three divisions, and this plan has been so effective that educators throughout the country are manifesting constantly increasing interest in the Camp Roosevelt plan for "building better boys." The most popular of these divisions is the summer school, which includes seventh and eighth grade and all high-school subjects, and whose credits are accepted unreservedly by educators. The R. O. T. C. or military division is designed primarily for boys fourteen years of age and over who prefer the outdoor program of health building, while the Junior Camp, for boys from 9 to 14, affords a life of romance and adventure to the youngster.

Those of our readers who are interested in clean, wholesome, active, outdoor life would do well to study the Camp Roosevelt method of providing for boys the ideal vacation. It is the most progressive step for the development of better future American citizens. The camp is located on Silver Lake, near La Porte, Indiana.



THE "TWELVE APOSTLES"

This unusual group of beautiful beech trees at Bay Ridge, New York, known as the "Twelve Apostles" (though there are only eleven of them), has been nominated for the Hall of Fame by Mrs. A. W. Parker, Vice-President of the Bay Ridge Reading Club. They are also known as the "Hessian Beeches," because tradition has it that the Hessians camped under them during the Revolution. The trees lie directly in the middle of what is officially mapped as a street and which may be opened at any time. It is sincerely to be hoped that the engineers, in planning the street, may make some provision by which these historic trees of old Bay Ridge may be preserved.



WILD LIFE AND WILDFIRE

BY JAMES OLIVER CURWOOD

America owes a debt of gratitude to this distinguished author for his untiring campaign in the interest of preserving our wild life. In this powerful story of systematic devastation, Mr. Curwood makes a vital contribution to the nation-wide protest against the slow but sure extermination of our big game, following the destruction of our forests under existing laws.

WE Americans are, and have been, a breed of destroyers and of monumental egoists. In the blindness of self-conceit we have reaped, but we have not sown; on the treacherous sands of human "almightiness" we have set ourselves up on pedestals, and we are only now beginning to see our sins and our weaknesses. My own life has been typical of millions whose boyhood begun a generation ago. Both religion and school instilled into me that I was next in place to God, and that all other life, from the life of trees and flowers to that of beasts and birds, was put on earth for my special benefit, and that no other life had a right to exist unless the human egoist saw fit to let it live.

More than once I have been asked to give the fundamental reason for my fight to preserve what remaining wild life and forests we still have in my native State of Michigan—a bitter fight waged against those same elements of political machinery, incompetence, and lack of practical intelligence which have played such deadly parts in the slaughter of natural resources throughout our country—and always my mind has swept back over the tragedy of the last fifteen years to find its answer. While my own state, where I was born and where I have lived for almost forty years, is in my opinion the darkest blot on the map of the American continent, when it comes to the matter of forest destruction; and while I am confident it will take a quarter of a century of intelligence and technical ability to give back to us the wild life which lack of conservation has lost to us in a pitiable fraction of that time; and while, moreover, I shall continue to wage war until big and broad-minded men specially fitted to direct the conservation machinery of a mighty state re-

place the present system of political appointments, I am convinced that every true conservationist should put his shoulder to the "national wheel" and pull for the country at large as well as for his local environment, if the ultimate and greater triumph is to be achieved.

While we are slowly but surely awakening to the deadly error of these teachings of our youth, and while the necessity for a proper conservation of the resources which God gave to us in the beginning is becoming a living thought throughout our commonwealth, in our homes, our churches, and our schools, one still cannot feel himself a fighter in the ranks until he or she realizes the awful devastation of the past few years. Our youth did not pass through the grimmest of that tragedy, and millions of boys and girls now in our public schools, our conservationists of tomorrow, must depend upon us for those visions of the past by which they will be guided to the possibilities of the future.

For those who have not seen the great change with their own eyes and who have not been in a position to witness the tragedy of destruction, not only in a local environment, but in a scope covering two-thirds of a continent, my own experience of fifteen years in the open spaces may be of interest, if not of actual value, in showing how swiftly the destruction of our wild life has swept upon us and how quickly we must now act to save it from utter annihilation.

With the beginning of those fifteen years, almost the entire northern half of our continent was one vast breeding ground of wild life, and this in spite of the fact that for nearly two hundred years the Hudson's Bay Company had steadily used large areas of it as their hunting and

trapping grounds. Fifteen years ago the buffalo were gone, it is true, with the exception of a few survivors in the Athabasca country. In those days I was employed by the Canadian Government as a sort of "last frontier" investigator and explorer, and I had unexcelled opportunities for coming in contact with the wild life between Montreal and the Pacific. On every railroad then running in western Canada the daily recreation of passengers was counting the coyotes and antelopes. The buffalo trails and wallows were then, and even later, plainly visible from the car windows, and over vast areas the prairies were crisscrossed with them. But in the face of this tragedy of the recent passing of the buffalo people marveled at what seemed to be the inexhaustible supply of wild life still left. From the car windows wildfowl could be seen not only in thousands, but in countless

millions. Every bog-hole and lake was black with them. One early autumn, when I rode several hundred miles horseback from Medicine Hat to the Caribou Mountains to run down a rumor of buffalo living there, I was not for an hour at a time where I could not hear the thunder of the wings of rising wildfowl. For years I looked upon the tragedy of settlers slaughtering ducks and geese literally by the wagon-load. At Dundurn, Saskatchewan, I was the guest of a wealthy rancher when a hunt was planned. There were six of us in the party that visited a lake several miles out in the prairies. Shooting began at dawn. Marksmanship was not necessary, and by the time the evening shoot was over the kill was over six hundred ducks, and filled a wagon. In those days game was slaughtered in this way, cleaned, and placed in ice-houses for winter use.



From a painting by Carl Rungius, Courtesy the Biological Survey

THE GREAT ALASKAN MOOSE

Occasionally, in the years that followed, I went over these same tramping grounds. Year by year I watched the going of the wildfowl and the prairie chicken. During a "flight" season of wild geese I have counted as many as thirty burning straw-stacks on a single night, around which the slaughterers were gathered to kill the geese that circled low in the illuminations.

The result was appalling. Today, at the end of those few years, if you ride from Winnipeg to the mountains on either the Grand Trunk Pacific or the Canadian Pacific

responsible for this in Canada, just as these same elements have been responsible in our own country. Not only have they "hogged" the wild life of lake and stream and forest, but so long as their own immediate and selfish wants have been filled they have cared but little for the future. They have not made intelligent laws, and when such laws have occasionally been made they have not used the power of their vote to demand an enforcement of them. In almost every instance true conservation, where it has won out at all, has had to ride over rotten politics.



Courtesy of the U. S. Forest Service

AMERICAN BISON, FORMERLY KING OF THE PLAINS, NOW TO BE FOUND ONLY IN THE GAME PRESERVES

the probability is that you will not see even a coyote. Surely you will not see an antelope. The ponds and lakes once black with wildfowl will occasionally hold a family of ducks or a small flock. There are no wild geese; even prairie chickens create an unusual interest when they are seen. The greatest breeding grounds that North America has ever known, outside of the Arctic tundras, are gone.

The settler and the hunter, together with political stupidity and selfish ambition, have been almost entirely

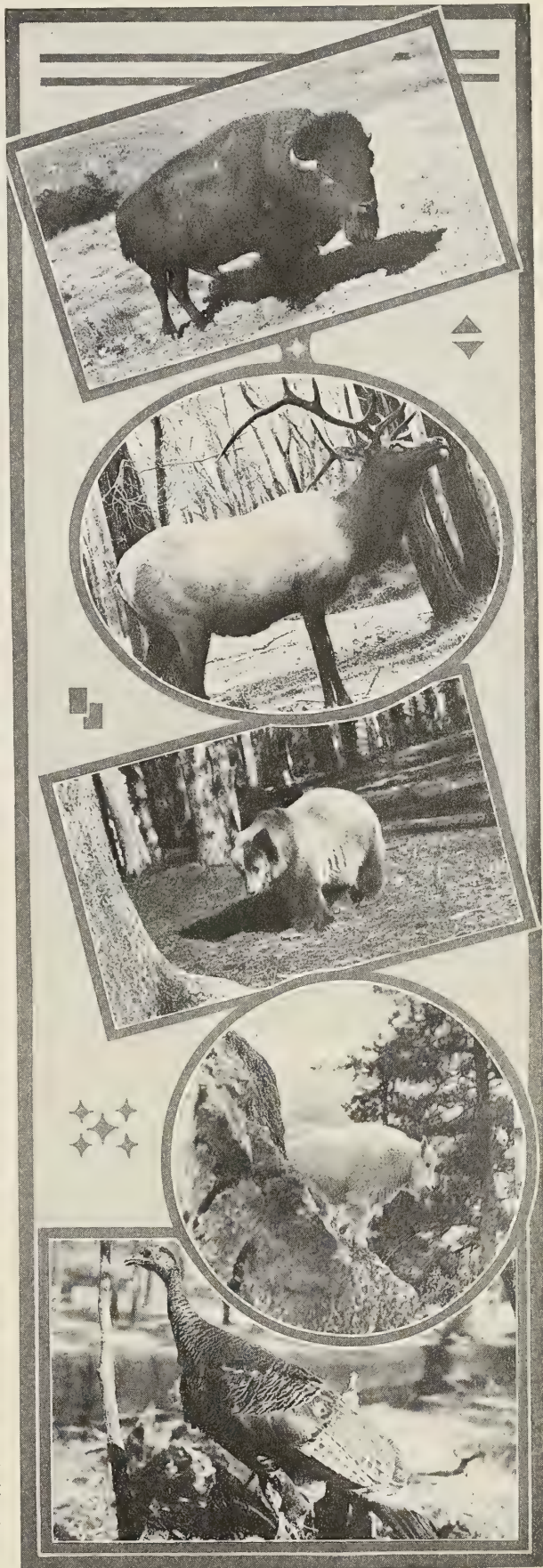
Within these same fifteen years I went ahead of the "line of rail" of the Grand Trunk Pacific, through Yellowhead Pass and the British Columbia mountains. This was before a mile of steel had been laid beyond the prairie foothills, and I found a game paradise which some might consider an exaggeration if I could describe it as it actually existed. Bear, deer, sheep, goat, and caribou literally swarmed in these regions. At one time I counted eleven bears on one mountain slide, all visible at the same

time, and I have seen bands of sheep which numbered as high as a hundred. Several times since those days I have gone through these same regions. The so-called "sportsman," with his automatic and his pump-gun, has wrought frightful havoc. Today one must outfit a pack-train and go deep into the mountains for days and weeks at a time to find a single grizzly or sheep, and he is a fortunate hunter if he brings home either. During one season which I spent in the Firepan Mountains gathering material for my "Grizzly King," I saw twenty-seven grizzlies, innumerable blacks, and hosts of other game. On my last trip I spent six weeks and saw three bears.

Still farther north one sees the result of modern-day destruction. Today, even to the Arctic coast, a caribou herd of a thousand head, even in migration, is unusual. All through the northland they have split into smaller bands. Rifles have come in with the white man. The slaughter of the wildfowl life of North America on the prairies of western Canada and our own western states has also sounded the doom of the hoofed beasts. We must remember that the geese and ducks on Lake Superior today were on the Arctic tundras a few weeks ago, and will be in the tropics a few weeks hence. A slaughter in Florida may bring hunger and starvation to the Indian three thousand miles north. There was a time when the Arctic tundras were what the Indians conceive their Happy Hunting Grounds to be. They were the Canadian prairies multiplied ten times; it seemed as though the wild life of the earth gathered there to breed. But the man from Saskatoon, Winnipeg, Topeka, Milwaukee, Detroit, and St. Augustine has robbed even the distant tundras of their life.

In the United States even more than in Canada are we today seeing and feeling the effects of an appalling devastation. My own State of Michigan is an example. The story of its outraged forests and wild life is a tragedy of desecration, of money-lust, of personal selfishness, and political incompetence and stupidity. Michigan is a particularly good state to look at in these last days of forests and wild life simply because of the fact that God intended it to be the greatest water, forest, and wild life paradise on the American continent. No other state was so completely endowed with all things or so richly stored with possibilities at the beginning. Its wild life and forest resources have been worth billions, and had these natural gifts been *harvested* instead of slaughtered, they would be worth billions today. Yet, in this state, never have we had a man technically trained and educated in conservation matters at the head of our conservation affairs. The present Director of our Conservation Department is a man who has been thirty years in politics. Our Secretary of Conservation is a newspaper man. And only a few days ago the dean of American forestry, Prof. Filibert Roth, Professor of Forestry in the University of Michigan, found it necessary to resign from our Conservation Commission because he could no longer fight against the environment which made his lifelong experience and technical worth of no practical value at all.

This system is not the fault of an individual or individuals. It is perfectly legitimate for politicians, newspapermen, railroad engineers, lawyers, preachers, or candlestick-makers, to run the vast natural resources of any state *if the people so will*. They



THE TRAGEDY OF THE PASSING OF OUR BUFFALO THREATENS TO BE CLOSELY FOLLOWED BY THE LOSS OF OUR ELK, BEAR, MOUNTAIN GOATS, GAME, AND OTHER DENIZENS OF THE WILD

cannot be held accountable for the fact that they are not technically skilled forestry men, or that they have not had the long and intensive training, education, and scientific application of study which every other great corporation on earth would demand of those in charge of its resources. The people themselves are at fault. They alone are to blame for not rising in the power of their vote and bringing about a condition where the very best men that money and science can produce are employed as the guardians and care-takers of our forests and wild life, our lakes and streams. Until that time comes, until every governor and every legislature in every state demand the very highest of skill, training, intelligence, and technical ability at the heads of our conservation activities, we must miserably fail.

deer, an animal that has been domesticated for more than fifteen centuries, has been imported into our north woods, where they are cared for and fenced and fed like cattle, one of the finest of all game animals, the black bear, is still killed in our state as "vermin."

During the two years of 1919 and 1920 there were 1,442 forest fires in Michigan, and these fires burned over 620,493 acres of forest land, or *one thousand square miles*. At the ridiculously low rate of \$50 an acre, this means a total loss of over \$30,000,000 in those two years, or \$10 for every man, woman, and child in the state. While our political régime estimates Michigan's forest-fire loss at only \$2,000,000 a year, experts trained in their business have estimated the loss at \$100,000,000 a year. I have split this in two and estimate it at \$50,000,000.



Courtesy the United States Forest Service

A FAMILY ROW—INTERESTING DEVELOPMENTS PROMISED AT ONCE!

The tremendous loss which has occurred throughout the United States because of lack of these things is shown by conditions as they exist in my own State of Michigan. Because of timber-slaughter and forest fires, over one-third of Michigan is virtually bankrupt, paying no more in taxes than the cost of collecting the taxes, unable to build roads and schools, and even unable to provide police protection. Fourteen million acres, or over twenty thousand of our fifty-seven thousand square miles, are idle, barren, and fire-blasted.

In spite of the newspaper propaganda which is always sent out in great volumes from the center of political activities, our wild life has gone rapidly with our forests. Of our two thousand miles of inland waters at least 50 per cent, or one thousand square miles, have been robbed and polluted until they are now what is technically known as "barren." Our grayling is utterly extinct. Our trout streams are going swiftly and are not 20 per cent of what they were a few years ago. While energy and money have been expended in importing and propagating the ring-necked pheasant, a semi-domestic fowl that will forever be impossible as a game-bird, our native partridge has been neglected until pot-hunters, if they were allowed to exist today, would starve to death. And while rein-

These figures for 1919 and 1920 are tragic enough, but in the year 1921 there were 1,028 forest fires in Michigan, or almost as many as in the preceding two years combined.

I have always hunted, have always loved the woods, have lived in them a great deal of my time. The money which carried me through college I earned at trapping. But it is only when I view my experiences of the past few years that I see the tragedy of today in all of its naked horror. With wild life not only going, but almost gone, it seems to me little less than criminal that the people of great commonwealths will still allow politicians to run their conservation affairs. I feel and see the sickening effect of it.

A great corporation that builds automobiles would consider it suicidal to place a plumber or a carpenter at its head. A big hotel would not place its management in the hands of a stone-cutter. Yet the people of a state, the mightiest of all corporations, will see a petty politician, or a butcher, or a mechanical engineer in control of all the forest and wild life resources which God has seen fit to give it. To me this is little less than sacrilege. It is a body blow at the Great Giver of things Himself. It is as senseless as placing a trained forester in command of a

[Continued on page 177]

The President's Letter

Declaring that a national forest policy is "of utmost importance to every man, woman, and child in the country," President Warren G. Harding, in a letter made public last month, pledged himself to national leadership in conserving, protecting, and encouraging the growth of our timber resources. The President's letter was written to Mr. John D. Clarke, a member of the House Committee on Agriculture, and reads as follows:

MY DEAR MR. CLARKE:

I have your letter of January tenth, with which you enclose draft copy of a proposed Federal Forestry Bill. This measure deals with a matter in which, as you know, I have been profoundly interested, and which, indeed, is a matter of utmost importance to every man, woman, and child in the country. While I have not been able to keep as closely in touch with the extended hearings which have been held by the Committee on Agriculture in the House during the past year and a half as I should have liked, I have known of them, and also of the appointment last summer, before Congress adjourned, of the subcommittee of which you are a member. I was very glad to note the appointment of this subcommittee and am glad now to note in this proposed bill the beginning of an effort to make constructive use of the results of your exhaustive study of our forest problem.

The Federal Government has made fine progress in its scheme of forest reserves, the development of methods of forest protection against fire and insect and plant pests, in promoting reforestation and methods of timber conservation, and in its research looking toward improved methods of timber utilization. Some of the States have formulated State programs along the same general lines, and of recent years especially there has been a steadily growing interest on the part of private owners of forest lands. I am very glad, therefore, that the Committee on Agriculture feels that we have come to a time when definite provision should be made for larger co-operation between the Federal Government, the States, and the private owners, with a view to working out a national policy covering the growth, protection, conservation, and use of timber.

When we remember that substantially one-fourth of the national area is forest land or potential forest land of little or no value save for timber production, the need of such policy becomes apparent. Already we have consumed or destroyed 60 per cent of our original timber wealth, and we are now using timber at a rate four times as fast as we are growing it. Millions of acres which were once covered with fine forests and which are suitable only for the growing of timber are now entirely barren. Prosperous communities, built up while these virgin forests were being harvested, have disappeared, transportation lines have been torn up, and social and industrial decay has followed. The growing of timber is the most practical use to which these lands can be put, and population and industry of these regions may be restored only by restoring the forests. To this end both Federal and State governments may well lend every proper encouragement.

As we have consumed our forest growth nearest to the centers of population and industry it has become necessary to ship the timber needed for constantly increasing distances at steadily growing transportation cost and inconvenience and with consequent increases in the price of lumber. This has added to our difficulty in meeting the housing problem and is bound to mean lower standards of housing and less adequate farm improvements. These are vital matters, striking directly at our sources of national strength. Regrowth of our forests on cut-over lands which are most suitable for that purpose in the more populous portions of the United States is therefore highly desirable.

It is interesting to note that probably 150,000,000 acres of forest land, or nearly one-third of such land in the country, is owned in small parcels by farmers. A well-cared for woodlot offers a valuable means of utilizing the inferior soils on many farms, and such woodlots in the aggregate can make a material contribution to our

timber needs. Wise action by Federal and State governments can do much to stimulate the growth of such woodlots, to the benefit both of the farmers immediately concerned and of the general public. * * *

The draft bill which you have presented contemplates co-operation between National and State authorities to protect timber from fire, the Federal Government to bear a part of the expense. Accordingly, it is proposed that the Federal authority may, in its discretion, withhold contributions to this end if the States do not comply with the requirements. This is an altogether desirable condition. The last annual report of the Forest Service of the Department of Agriculture shows that in the six States of North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi, of which only North Carolina is organized for fire protection, the area of forest land burned in 1921 was 58 per cent of the total burned in the United States, and the damage resulting was 49 per cent of the total damage in the country. This seems conclusively to prove the importance of insisting upon effective State co-operation if the Federal Government's contribution to fire protection is to be most useful.

I therefore heartily concur in the policy of inducing all the forest States to pass satisfactory protection legislation, by providing that the Secretary of Agriculture may withhold co-operation with them in forest protection unless the requirements which he shall propose are adequately met. There is every reason why the Federal Government should prefer to spend its co-operative appropriations in States where they will count for the most in forest protection. States which are backward in this regard should not participate in the benefits of the Federal policy until they are willing to meet such reasonable conditions as the Secretary of Agriculture may prescribe.

I suggest that the proposed draft might be strengthened at another point. The taxation of privately owned forest lands is a matter of State policy and varies widely in different States. Many years are required to grow timber of merchantable size, and there is not much inducement to land-owners to incur the expense of forestation, protection and taxes, decade after decade, in order to produce at last a timber crop which a future generation shall harvest. Some of the States have recognized this condition by very liberal methods of taxing timber land and thus encouraging private interests to grow timber.

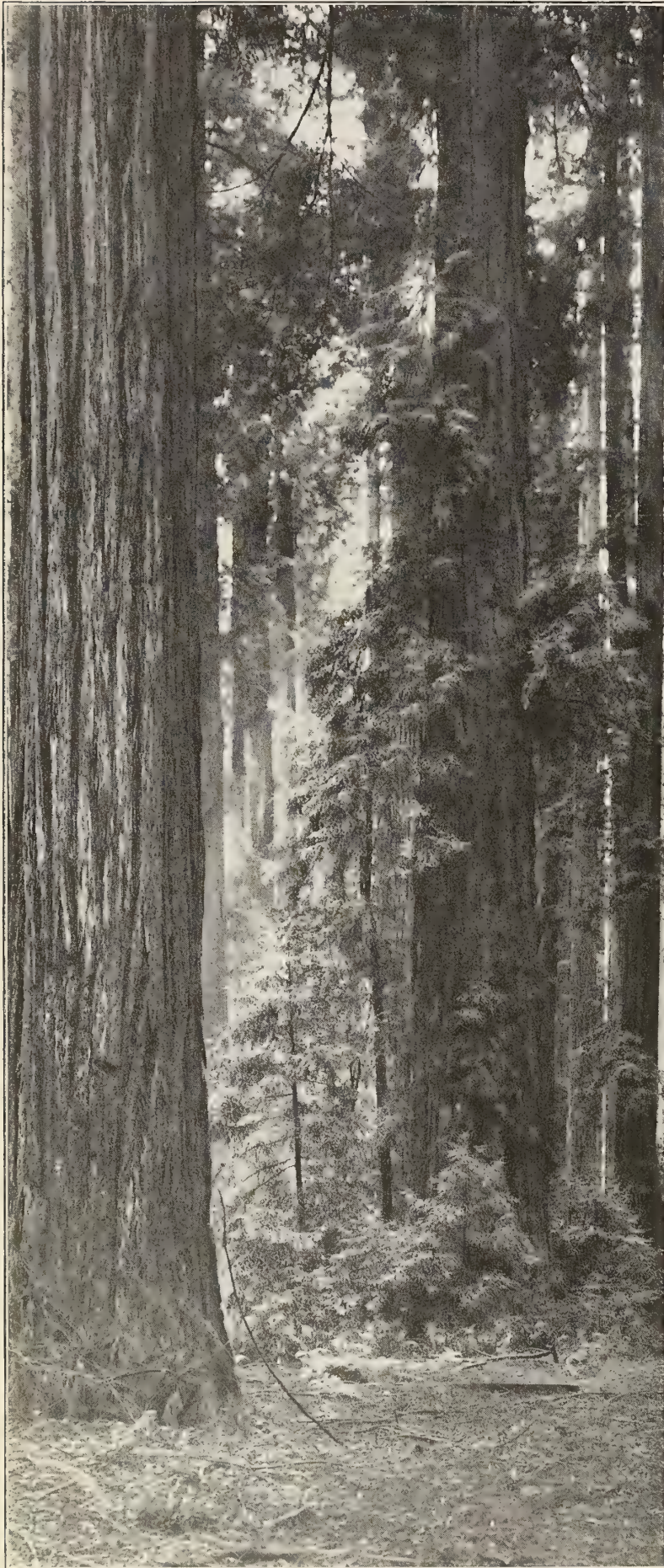
Others have failed in this regard, and it is suggested that the Secretary of Agriculture be given ample authority to study the taxation policies of the several States regarding timber lands and growing timber, together with their particular effects upon reforestation, and to collaborate with proper agencies of the States in devising improved methods of taxing forest lands adapted to their conditions. No matter how generously the Federal and State governments may appropriate to create forest reserves or to protect forest lands from fire, private interests should be given every encouragement to do their full share in growing timber, and one of the most effective forms of encouragement is an appropriate liberalization of taxation.

Being firmly convinced that national leadership in conserving, protecting, and encouraging the growth of our timber resources is absolutely necessary, I feel that legislation along the line proposed in the draft which you have submitted represents an important step in the perfection of a truly national forest policy. If I can be of aid to the committee in its further labors on this proposed legislation, I shall be glad to spend a short time with them in the near future.

Very truly yours,

WARREN G. HARDING.

Hoo-Hoo's Memorial Grove



IN THE VIRGIN REDWOODS—A BIT OF UNSPOILED BEAUTY IN THE GREAT FOREST GARDEN SET BY GOD FOR HIS OWN AND MAN'S DELIGHT

As a memorial to its distinguished members and as a recreational refuge for lumbermen and their families, the order of Hoo-Hoo, the fraternal society of lumberdom, is taking steps to acquire and set apart for permanent preservation a tract of virgin redwood, *Sequoia sempervirens*. At its annual meeting in 1921, the order appointed a committee to select a tract, and during the past summer this committee has been investigating different areas of giant redwood suitable for the purposes.

Two tracts have already been recommended. One of these tracts is the undedicated portion of the redwood area bought by Dr. Phillips, from which the Colonel Bolling memorial, with its stately trees, has already been segregated by the State of California. The other is an area of exquisite beauty along the south fork of the Eels River. The final selection of the tract has been left to the new officers of the order, and it is anticipated that the selection will be made in the near future.

A part of the redwood grove, when chosen, will be marked as a memorial and dedicated to the memory of those who have widely served Hoo-Hoo and the lumber trade. In addition, it will be given over to the use of lumbermen and their families for camping purposes. Suitable cabins and other facilities for healthful and enjoyable outdoors recreation will be provided.

Hoo-Hoo is the pioneer fraternal organization of the lumber world. Its thousands of members are scattered over the United States and Canada, with followers in Great Britain, Mexico, Japan, the Philippines, and on the continent of Europe. A recent statement from the order with respect to the proposed redwood grove reads:

"Interested in every phase of education and better training that will give to the forests of America more intelligent management, use, and propagation, Hoo-Hoo is vitally interested in the conservation of the timber resources that are at so low an ebb."

It is to be hoped that this project may lead to a desire to secure similar tracts of Douglas fir, Western pine, yellow pine, and cypress to be preserved in perpetuity, and if "modern demand makes necessary this attack upon the last corner of America's primeval forests," it is well that "lumbermen, who know so well the charm and glory of a virgin stand of timber," should do their bit to leave these memorials for the benediction of generations to follow.

Perpetuating the Redwoods

BY GEORGE H. RHODES

IF an observer in an airplane could have flown over the prairie States, the Rocky Mountains, and the "Great American Desert" in the year 1849 he would have seen hundreds of ox teams, mule teams, and horse teams, thousands of people on foot and on horseback, all toiling feverishly toward California. Flying over the Pacific Ocean, he would have seen hundreds of ships, every one an argosy with all sails spread, shaping their courses for the Golden Gate.

THE RAINBOW'S END

It was the lure of gold. Every man, woman, and child in that migrating horde was thrilled and energized with a vision of riches. Every scout and rider had new stories of fabulous discoveries. In their minds the Forty-niners could see themselves picking gold nuggets from the beds of streams, washing gold dust by the panful from glittering sands. So they came to the Golden State and continued to come for years afterwards.

The idea was to get rich and go home; to gather enough wealth in a few months to enable them to live in ease and luxury the rest of their lives and return to their people. Practically none of them came to settle in California. They were adventurers bound for a land of promise, spurred on by the ever-thrilling and inspiring hope of great wealth, as quickly and as easily gained as finding the pot of gold at the end of the rainbow.

On arriving, some were unfavorably and some were favorably impressed; unfavorably by the scarcity of gold and the difficulties to be met in acquiring it; favorably by the mountains, valleys, streams, forests, flowers, and climate—all unending in variety and irresistible in attraction. So, instead of continuing the search for gold, many of them took farms in the valleys or stock ranges in the foothills, made homes, established their

families, gathered into communities, constructed roads, and began to acquire wealth from sources other than mines.

This removed all ideas of returning whence they came, and their love for their adopted State—the land of sunshine, fruit, and flowers—continued to grow and to make the Californians the most loyal and devoted and the most forward-looking people in the world. So rapidly did settlement go on that California was admitted as a State in September, 1850. Coming as they did with great expectations, fulfilled with the diverse bounties of a smiling land instead of mere cold metal, they realize and appreciate the value of their natural resources; the

land and its products, the lakes and streams continually replenished by rain and snow, a variety of climate, unknown stores of minerals, and a coast-line affording many good harbors.

IMPORTANCE OF FORESTS RECOGNIZED

Developing the varied resources of their State has been the enthusiastic occupation of the

people of California. Agriculture, mining, manufacturing, and transportation have been rapidly carried forward. There are great irrigation systems, plants that develop enormous hydro-electric energy, vast storage reservoirs of water for municipal and domestic uses, paved highways connecting the most populous with the most remote regions, and improved rivers and harbors. Along with this use and development of natural resources has gone an increasing recognition of the important part played by the forests. Their value as watershed protection and conservators of stream flow has not been overlooked. Their varied favorable influences on industrial and living conditions have long been taken into account. That they are essential to the present and future prosperity of the State is accepted by all.

These are the fundamental considerations back of for-



WHERE REDWOOD LUMBERING BEGAN

This mill, built in Mill Valley, California, by James Reid six years before the gold rush days of forty-nine, still marks the birthplace of the redwood lumber industry. The hewn timbers of the old mill are still sound and the two redwood trees at the right are sprouts from the stump of the first tree felled. They are thirty inches in diameter and a hundred feet tall.

est perpetuation in California. As early as 1885, when the virgin redwood and pine forests were practically intact, a commission was appointed to inquire into forest conditions and formulate a forest policy for the State. Since that time constructive forest laws have been steadily adopted, until today California stands among the leading States in this regard. Reforestation and protection from fire have always been recognized as the essential things in a scheme of forest perpetuation, and both have been given increasing attention. Natural conditions are such as to be exceptionally encouraging to both reforestation and protection.

WHEN REDWOOD REFORESTATION BEGAN

Reforestation in the redwood region began in California in 1843, when the first sawmill was built in Mill Valley. As soon as those redwood trees were cut, sprouts sprang from the stumps, and today there are ten or more good trees where one stood in the virgin forest. It was the same throughout the redwood region.

As timber was cut to supply lumber for the rapidly growing rural and urban communities, sprouts sprang from the stumps and seedlings from the ground to replenish the earth with new, rapidly growing trees.

The redwood forests cover an area of approximately 2,000,000 acres, extending along the coast from a hundred miles south of San Francisco northerly to the Oregon line, and reaching from ten to forty miles inland. They grow on the steep watersheds of the short streams that flow rapidly down the last western slope to the sea. These are the only redwood forests in the world and contain the largest and tallest trees and the heaviest stands of timber known.

The winters are long, with a rainfall running from 40 to 120 inches, and the summers are foggy and cool. These climatic conditions are favorable both to tree growth and fire prevention. The forest floor is generally clean on the slopes and covered with ferns and hardy evergreens along the streams and in swampy places. These conditions, combined with the thick bark and non-



(Courtesy Union Lumber Company)

THE END AND THE BEGINNING OF TWO REDWOOD FORESTS

This picture shows the complete destruction of forest cover, characteristic of redwood lumbering. The destruction, however, is more apparent than complete, because there is still life in the stumps, and after a few months they will send up sturdy sprouts—the beginning of a new redwood generation.



(Courtesy Union Lumber Company)

A REDWOOD FOREST TEN YEARS OLD

Stripped of a magnificent stand of redwoods about ten years ago, Nature set to work at once to build a new forest. The bushy-looking growths on the hillsides are clumps of redwood sprouts, about ten feet high, which have sprung up from the stumps of the old forests. Here you see the survival of the redwoods through the most critical stage.

resinous character of the wood, make the redwoods as free from injury by fire as forests can be.

Since lumbering began in the redwoods, over 70 years ago, approximately one-third of the virgin forest area has been cut over and approximately one-fourth of this area has been cleared for farming. At the present rate of cutting, the remaining timber will last 140 years. Second-growth redwood is flourishing on practically all the cut-over land that is not being farmed. The age of this new timber is from one to 75 years and stands as high as 130,000 board feet to the acre are known. It is estimated that the average stand of 40-year-old timber is around 40,000 board feet to the acre. While the regrown redwood trees will not be as large when cut for lumber as are the trees of the virgin forests, the stand will be much more dense and uniform, making the yield per acre greater than the average yield from virgin forests. When the regrown redwood timber is harvested in the future, the yield will be greater than was cut from the same area of virgin forest.

HALF A MILLION ACRES OF NEW REDWOODS

Today there are approximately 1,400,000 acres of virgin redwood timber and 530,000 acres of naturally reforested redwood land. Both the virgin timber and the second growth are protected from loss and damage by fire by the owners, individually and through co-operative associations, ably assisted by the counties and the State Board of Forestry. This system of protection has become so effective that in 1921 the area burned over was 4,260 acres, or about 2.3 acres in every 1,000, with a loss of \$4,465, or \$1.04 on every acre burned over. While it seems hardly possible to decrease such a small loss still further, there is no doubt that increasing care to prevent fire and better system and organization for suppression will succeed in doing it. Under such conditions increasing attention to reforestation is being encouraged, and all the cut-over lands brought rapidly under a full stand of timber.

A full stand of timber is of first importance in reforestation. It marks the difference between timber that

grew under natural conditions and timber that must be grown under the care of man. Natural forests are very dense in some places and very thin in others, with considerable scattering areas of open or brush land. One of the first things in successful reforestation is to prevent this waste of forest land by securing a full stand of timber on every acre. This is important not only for quantity, but also for quality, since the trees grow cleaner and straighter in dense stands.

Seeing this clearly, the owners of reforested redwood lands are taking steps to do whatever planting or seeding

And another factor enters into this matter of a full stand of timber on every acre. While the virgin redwood forests are almost a pure stand, other trees come up among the little redwoods on reforested lands. Some of these are Douglas fir, spruce, hemlock, white fir, oak, and tanbark. Most of these, being intolerant, will grow straighter and cleaner among the rapidly growing redwoods than alone. Most of them can also be cut out for various uses before the redwood reaches sawlog size, thus providing short-time returns that will absorb a good part of the carrying costs. All except Douglas fir are



(Courtesy Union Lumber Company)

A NEW GENERATION OF REDWOODS

Lumbered fifty years ago, these mountains are now clothed with a new forest of redwoods and Douglas fir. The tall trees in the foreground and on the ridges are veterans of the old forest—fugitives of the day when redwood lumbering was not as destructive as it is today.

will be necessary to make full use of the land. Nurseries are being established for propagating trees, and studies of the areas are being made to determine where planting or seeding must be done.

As a result, when the time comes to harvest the crop, a full yield should be cut from every acre and the amount and quality of the timber should be high. There will be no open spaces or thin stands to be "brought up to a good average" by the dense stands. Every acre will be made to do its part, to bear its own burden of timber.

especially important in this way; hence the necessity of having a full stand of redwood on such lands. The Douglas fir seems to grow about evenly with the redwood, making a good mixed stand.

WILL THE REDWOODS BE PERPETUATED?

Redwood resists decay remarkably, and the litter left from logging is no exception. If allowed to remain, it would be a menace to the young growth for years and might cause very destructive fires. Consequently it must

be burned as clean as possible, and as this has always been the practice in redwood logging operations, there are never any extensive or destructive fires in the young growing timber. Debris from split-stuff operations sometimes causes a hot enough fire to burn all the foliage from young trees, but these are re-clothed with a denser robe of green the next spring, the dead limbs standing out white a few years and gradually disappearing.

What are the prospects for perpetuating the redwood forests and the redwood lumber industry?

The 1,400,000 acres of virgin redwood forests contain an aggregate of 70 billion board feet of redwood and 10 to 15 billion board feet of fir and other species. At present the annual cut is around 500 million board feet from 10,000 acres. At this rate the virgin timber will last over 140 years. An increased annual production of lumber may be expected to reduce this time to 70 or 100 years. The re-growth on the land being logged off today will have at least 70 or 100 years to grow, and the re-growth on land logged off 40 years ago will have 70 or 100 years more in which to increase in diameter and height.

If all the virgin timber were being cut by one sawmill, it would not be necessary to use any second-growth timber until it is between 100 and 140 years old, but the mature timber available to different mills will make it necessary for some of them to begin cutting second growth before it is 100 years old. This will be about 1950. At that time the second-growth timber will be between 70 and 90 years old and the stand will average probably 60,000 board feet per acre. Between 1950 and 2020 the remaining virgin timber will be cut and the second growth will come gradually into use. Thus the



(Courtesy Union Lumber Company)

A GIANT'S FAMILY

Fifty years ago the redwood whose stump is here shown was cut. Encircling it today, like guardians of its grave, are seven sturdy sons, which sprang up from its base. This picture shows the principal method by which the redwoods perpetuate themselves.

redwood forests promise to be made permanent and the industries for which they furnish raw materials to be perpetuated.

A NEW LIGHT IN THE REDWOODS

One thing is having an especially strong influence in favor of reforestation in the redwood region of California, and that is the fact that practically all the active sawmills own enough land on which to grow a continuous supply of timber for their mills. Each of these operations is complete with land and timber; logging railroads, equipment, and ponds; a lumber manufacturing and finishing plant; yards and sheds for storage; facilities for shipping and distribution, and an organization capable of growing the timber, converting it into lumber, and supplying it to consumers.

As an example, one sawmill owns 60,000 acres of land,

of which 40,000 acres is reforesting and 20,000 acres carries virgin timber. The annual cut is 40 million board feet from 800 acres, at which rate the virgin timber will last 25 years. This mill began sawing about 1870, so that the second growth on the land first cut over is now 50 years old and will be over 75 years old when needed. Allowing a 75-year rotation plan of cutting, this mill can begin in 1847 and log off 800 acres every year to the end of time, taking care to reforest the area cut over every year and protect all the timber from fire.

Redwood owners are seeing a new light and embracing a new faith. Instead of regarding their industries as limited to the time when the virgin timber will be cut, they are replacing this idea of a vanishing industry with that of a permanent industry, based on a continuous supply of timber from the regrown forests accessible to their mills.

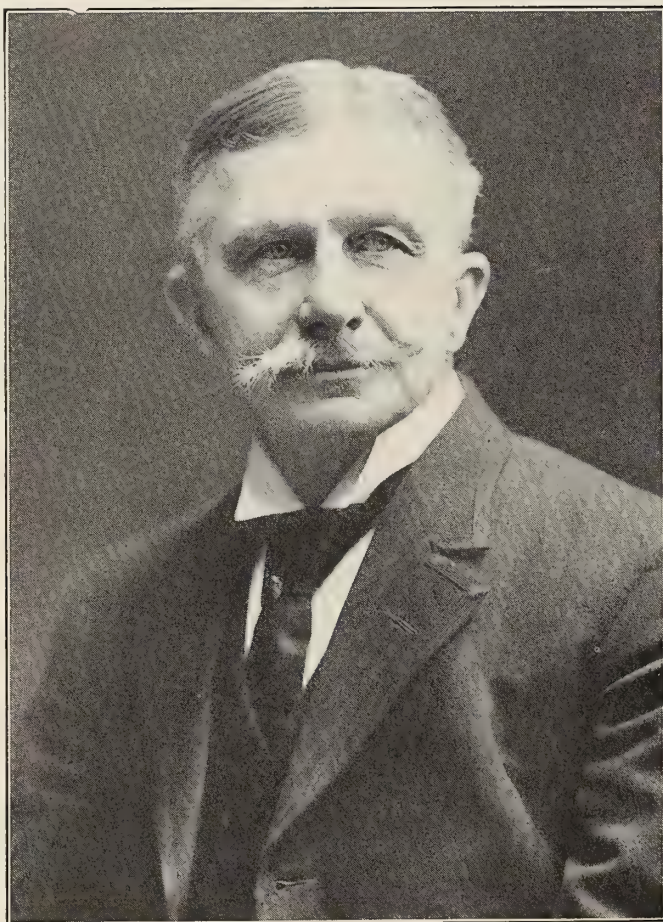
A Great Leader in Forestry Passes

TRULY it may be said again, and for the last time, "our master builder in forestry has laid down his pencil and square," for at Toronto, on the morning of February 6th, Bernard Eduard Fernow, author, pioneer educator, organizer of the forestry movement, and the first United States Forester, died.

Born in Posen, Prussia, in 1851, Dr. Fernow studied under the famous Heyer and other noted foresters. He came to America in 1876 and immediately associated himself with the forestry forces here. An organizer and one of the founders of The American Forestry Association, he served for fifteen years actively in its work as Secretary and chairman of the Executive Committee and editor of its magazine. Into this work he threw his enthusiastic effort, and out of it grew the epochal law of 1891, authorizing the President of the United States to establish National Forest Reserves—the birth of our National Forests.

Dr. Fernow's work as an educator, his pioneer work in establishing forestry schools in different sections of the country, ending only with his retirement, three years ago, as dean emeritus of the School of Forestry at the University of Toronto, is too well known to need repetition.

Extending over a period of forty years, Dr. Fernow, though German-born, worked unremittingly to impress upon our national consciousness the real meaning of forestry. Out of the depth of his own sincere conviction, he earnestly tried to develop an appreciation and understanding of forestry as a basic industry, and a monumental record of practical accomplishment stands today in testimony of his success. Truly, "the good men do lives after them," for there are few among the leaders in forestry in America today who do not remember with love and reverence the teaching of Dr. Fernow—few who do not feel privileged in acknowledging the powerful influence and inspiration of his leadership.



BERNARD EDUARD FERNOW

Russian White Birch--Rare Tree of a Thousand Uses

BY JAMES RICALTON

IT WILL appear strange to those unfamiliar with the countless uses of the white birch in some countries to see it here classed among rare trees. It is rare in its utilitarian applications, not in its limited habitat, for it is spread over the northern world and often serves only the vulgar use of firewood. It has no historic record, no connection with sentimental tradition, so far as we know; no edible fruit to give it a productive value; yet when we pass through regions lying well northward, such as Norway, Sweden, Finland, Russia, and portions of Siberia, where it is the prevailing tree and where we see it applied in every purpose for which wood is ever used, one will readily understand its indispensable value and its worthy claim to be classed among rare trees—rare in its usefulness. Heretofore our tree worthies have been found in tropical and subtropical regions. In the white birch we have found in the far North a wonderful tree servitor of

the human family. Especially is this the case in many parts of Russia. The white birch (*Betula alba*) is of greater value to the Russian peasantry in many parts of the country than the olive tree was to the Athenian, the date tree to the Arab, or the several orders of palm trees to the people in the tropical countries in which these trees flourish. Of all the trees in Europe, none extends a range so far north. It maintains a dwarfed existence on the lava-stricken wastes of Iceland.² It is endowed by nature with great energy and strength. It is often panoplied in ice for half the year, and yet when the late spring comes its graceful and slender spray bursts forth into the most delicate leafage. Its magnificent growth, the bright, tender, young green of its foliage in the spring, the bright and beautiful changes which its foliage assumes in autumn—yellow, brown, and crimson; also the graceful sweep of its branches, the picturesque manner of its group-



A WHITE BIRCH GROVE NEAR MOSCOW IN WINTER

In the white birch the far North finds a wonderful tree servitor. Valued in Russia particularly because of its manifold uses, it furnishes almost everything for the peasants of that country except food, and at that a vinegar and a sweet syrup, used instead of sugar, are made from the sap.

ing, its pure white bark in the winter—almost as chaste as the snow with which the forest groups are carpeted—render it the most beautiful of all the trees that brave the long winters of the rigorous northlands. While the white birch is among the most beautiful of the tree-folk of the far North, it is more remarkable for the countless uses to which it is put. One scarcely knows where to begin to enumerate them, but might say everything save edibles, and, indeed, some articles of food value, are made from it. Birkenwasser, the common drink of the Lettes, and vinegar, also a sweet syrup used instead of sugar, are all made from the sap of this tree.

The birch-wood forests are beloved by the people not merely because they furnish all domestic necessities, but because they resemble artificial parks in appearance, and in summer-time are the gathering place for swinging and dancing and for all festal occasions. There is no part, from root to summit, not turned into uses by the Russian people.

The foliage when fresh and young has many medicinal qualities; the buds and sprouts in the spring are gathered in great quantities and used in baths to give strength, and are believed to be efficacious in rheumatic ailments. In midsummer, when the leaves are more mature, they are gathered, boiled, and from them a beautiful yellow dye is obtained. This, combined with other substances, produces many colors and is used by the Lettes and Finns for coloring and ornamenting their cloths. Later on in the season, when the year's growth is fully matured, the leaves and small twigs are collected for winter use in a peculiar way. They are then called *slotes*, and are used to splash themselves with in the bath—the spray bath of the Lettes, I will call it; and these spraying twigs must be plucked at an exact season, so that the leaves will adhere firmly to the stems; therefore an ample supply of *slotes* for the winter is a *sine qua non* in every Lettish household. Finally, when the dead leaves fall, in the

autumn, they are gathered and used in stuffing cushions and pillows.

The wood of the birch is more suitable for most purposes than the spruce, willow, or linden, being more abundant. Carts, sledges, cradles, jugs, bottles, pails, spoons, all articles of furniture, and agricultural implements are made of it. Their houses are made largely of birchwood and thatched with birchwood bark; their shoes are made of plaited bark. Charcoal is the common fuel of the North, and this is made from the birch tree. From the roots a useful tar, called "deggot," is obtained. The

bark is thick, tough, and water-proof, so that all kinds of water vessels are made from it. The milk-maid's pail is of birch bark, ingeniously constructed from two sections of bark taken from a tree whose diameter gives the proper size of a milk-pail. A section of the bark of suitable length is removed from the trunk of the tree entire; a bottom and a lid are fitted to this shell of bark, and it is a serviceable milk-pail.

I bought in

northern Russia two pairs of birch-bark shoes at seven cents a pair. The shoes are sufficiently large to allow a generous bundling of rags on the feet. These shoes are so common and inexpensive that on the highways of foot travel the wayside is littered with the cast-off birch-bark shoes. The herdsman's horn is made of a tube of birchwood wound with the bark of the tree. The hunter's game-bag is of braided birch bark.

Another service of this utilitarian tree is one it performs for the world, far beyond the bounds of Russia; it furnishes the oil with which many kinds of fine leather are impregnated to give an agreeable odor, when it is called Russia leather.

I said that the birch had no historic record; I withdraw that statement. Its penal service has probably done more for the reclamation of youthful humanity than the Ten Commandments. Shakespeare recognizes this when he refers to "The threatening twigs of birch."



ATTRACTIVE AND USEFUL THINGS MADE FROM BARK

Imagine a pair of shoes for seven cents—the market price when the author was in Russia! Spoons, shoes, pails, herdsman's horn, a bowl, and game-bag made from bark and wood of the Russian birch.

Town Forests and Community Chests

By RALPH S. HOSMER

IT IS unnecessary to restate the reasons why a town forest is an asset to any community. Rather let us look ahead, past the arguments that may be advanced for the establishment of town forests, to some of the uses that an established public forest of this type may be made to serve. Of these I wish in particular to stress one point: that a town forest offers an easy way of providing a definite source of revenue for specific things that make for the welfare of that community. That a town forest can do just this is conclusively proved by the experience of certain European town forests, particularly those of some of the Swiss cities.

Forestry in America must stand on its own feet and develop its own methods. But the fundamentals of forestry are the same the world over, and our European friends have found and are applying to their distinct advantage a principle that we in this country seem so far to have overlooked, namely, to make town or community forests bear a part of the local expenses of the community.

Town forests overseas rest on a different basis from town forests in America. The communal forests of Europe have a background that runs well into past centuries. Some are the remnants of the ancient forest commons that antedate feudal times. Some were acquired in the land settlements that followed various wars. Others, perhaps the greater part in Central Europe, arose through the adjustments, about a century ago, of the "rights of user," that had been acquired by the common people during the Middle Ages.

When these forests began to be put under definite forest management the essential need was for a local supply of fuel wood. Wood is a bulky product. Transportation facilities were then poor. Wood was and still is the most important fuel of Central Europe. The communal forests were primarily established to meet this need. But, as the years have passed, the value of these forests as producers of timber has more and more come to be realized; so that, while they still supply the local needs for fuel, many of them, in normal times, yield considerable income from the timber grown and cut under the systematic procedure of forest management.

CONSIDER THE SIHLWALD OF SWITZERLAND

So much indeed is this coming to be the case that in many forests beech, the chief fuel wood, is now being replaced, as the older stands come to be cut and regenerated, by the more valuable conifers. A typical example is the Sihlwald, the city forest of Zurich, Switzerland, where the stand is being gradually transformed from a beech forest into a mixture of beech and conifers. This forest is one of the most interesting in all Europe. It has been used continuously for forest production since the year 853. Since 1524 it has been the city forest of Zurich, supplying in large part the

needs of that city for timber and for wood.

We in America have no such background for our town forests. Our problem is to utilize waste or otherwise unproductive land belonging to or acquired by the town in



A WOODLAND PATH IN THE BEAUTIFUL SIHLWALD—CITY FOREST OF ZURICH, SWITZERLAND. THIS ANCIENT FOREST IS ONE OF THE MOST INTERESTING IN ALL EUROPE. IT HAS BEEN USED CONTINUOUSLY FOR FOREST PRODUCTION SINCE THE YEAR 853 AND SINCE 1524 IT HAS BEEN THE CITY FOREST OF ZURICH, SUPPLYING IN LARGE MEASURE THE NEEDS OF ZURICH FOR TIMBER AND WOOD

such a way that it shall yield a revenue, assist in some cases in the protection of the local water supply, and also contribute to recreation. But in practice this is just what the European town and communal forests also are doing. We can thus study them with profit.

A point to stress about the Sihlwald and many other Swiss town and city forests is that the net revenues go, not into the general treasury of the town, but to the support of certain specified quasi-public institutions, like hospitals, libraries, and museums.

FOREST REVENUES BUILD HOSPITALS AND LIBRARIES

This reduces the amount that has to be raised through taxation and helps to give an assured income to these institutions. It is unnecessary to quote the exact amounts so distributed, or to give the proportion of their entire income that these institutions thus receive. That is immaterial. The policy involved is what is of interest to us, for it is one that is perfectly applicable to our own town forests. Drives for Community Chest contributions do not always succeed in reaching the goal set. It would be of distinct help in many cases were there an additional source of revenue to draw upon.

In some of the communal forests of Germany the receipts go a long way toward defraying the expenses of the village or town to which they belong. In a certain few small and isolated settlements the returns from the communal forest are even enough to pay all the local expenses and still leave a balance from which is made a cash distribution to each citizen. This is not to be taken as typical. In many instances, however, the money from the forest materially reduces the local budget.

COMMUNAL FORESTS MAKE BETTER COMMUNITIES

There are three things that especially impress an American who visits communal forests in Europe. First, the

fact that these forests supply the raw material for the local wood-using industries; second, that this leads to a permanent resident population of dependable citizens; and, third, that the communal forests serve the people of the vicinity for recreation, at the same time that they are making returns on a strictly commercial basis.

The local industries of an American town may not at all resemble those of Switzerland, or Germany, or France. Certainly, our way of doing things differs much from that of Europe. But our wood-using mills must have raw material. If it is not obtainable within a reasonable distance, the plant is likely to shut down and move elsewhere. It is to the benefit of the town to keep such industries going and to build them up. A town forest may not supply all the timber that a local company needs, but if it can supplement other sources it may be the deciding factor in holding that company in a given community. Add to this the fact that, after it is once established on a productive basis, the town forest can be made to yield a definite income annually or at regularly recurring intervals. Most American town forests are created by the joint action of a majority of the voters in a given town, but increasing interest is now being taken in the establishment of town forests by gift or bequest. Reverting once more to the Community Chest idea, if it were to be definitely provided that the net income from the town forest were to be



REPRODUCTION OF SILVER FIR 120 YEARS OLD, 100 FEET AND OVER IN HEIGHT, IN THE CITY FOREST AT WINTERTHUR, SWITZERLAND. WITH SUCH RESOURCES TO DRAW UPON, IT IS NOT SURPRISING THAT MANY OF THE COMMUNAL FORESTS OF THE OLD WORLD GO A LONG WAY TOWARD DEFRAYING THE TOWN EXPENSES AND EVEN ON OCCASION SUPPLY A SURPLUS FOR CASH DISTRIBUTION TO THE PEOPLE

used for some specific public purpose, as to help support the local hospital or the town library, the project must appeal to many who fail to become enthusiastic over a proposal to cover into the general town treasury whatever revenue the town forest may produce. To have it specified broadly that the net proceeds of the town forest were to be used for the support of local charitable or educational institutions would not be a troublesome restriction on forest bequests.

A TOWN FOREST A LASTING ENDOWMENT

Individual memorial trees are well enough in their way, but no single tree can be permanent. A forest, on the other hand, goes on forever. The trees in a given stand are in time cut down and used, as they ought to be, but the forest as a forest is renewed and persists. Witness the Sihlwald, now better than it ever has been in all the eleven hundred odd years of its history. If a donor wishes literally to keep his name green, let him endow a town forest.

With the growing interest in out-of-doors activities that is so happily becoming a feature of our modern American life, it should not be overlooked that the town forest offers great opportunities for recreation. It is a mistaken point of view that, to be available for recreation, forests must be locked up as preserves, whether privately or publicly owned. Under the right sort of forest management, a town forest can serve this need, along with fulfilling its purpose as a supply forest.

One of the few advantages that grew out of the gipsy and brown-tail moth infestation in Massachusetts, a few years ago, was the demonstration that improvement cuttings and thinnings could be made in forest parks like the Middlesex Fells and Blue Hills Reservations without in any way destroying their beauty or usefulness for recreation. Systematic and conservative cutting in a town forest under a forest plan would be scarcely more noticeable. It is all in the point of view. We have grown up thinking in terms of the original forest. That day has passed. The



THIS IS THE RESTHOUSE, RESTAURANT, AND LOOKOUT TOWER ON THE CITY FOREST OF DARMSTADT. IN COUNTING THE RETURNS FROM THE COMMUNAL FOREST, THE RECREATION VALUE MUST NOT BE OVERLOOKED. THE TOWN FOREST, PROPERLY MANAGED, MAY SERVE NOT ONLY AS A "COMMUNITY CHEST" BUT MAY MINISTER AS WELL TO THE HAPPINESS OF A PEOPLE BY FURNISHING PROPER FACILITIES FOR REST AND RECREATION

virgin forest in the east is gone, except for a few isolated stands. From now on we shall be dealing with second-growth forests. It is but a step farther to the point where one learns to see that there is as much interest and beauty in a forest under management as in one where decay offsets new growth.

EVERY CITIZEN A PART OWNER IN THE TOWN FOREST

There is a very definite need for the town forest in the United States. Our supply of standing timber is rapidly diminishing. Already Pacific Coast species are setting the price in eastern lumber markets. The consumer is the one who pays for the long haul across the continent or the voyage through the Panama Canal. The need of wood of all kinds for every sort of purpose is steadily increasing. Local supplies are imperatively demanded. It cannot be long before a shortage will be upon us in good earnest. We can only prevent a timber famine in years to come by the concerted and combined action of both public and private agencies, working to put large areas of the non-agricultural land of this country at work growing productive forest. It takes time to grow forests of economic value. We cannot start too soon.

In such a program the town forest has a unique part. No other class of public forest comes so close to the people. The appeal of the town forest is positive and direct, as every citizen can justly feel that he is a part owner.



AN ESTABLISHED STAND OF SECOND GROWTH SPRUCE IN THE CITY FOREST AT WINTERTHUR, SWITZERLAND. UNDER SYSTEMATIC FOREST MANAGEMENT IN MANY OF THE EUROPEAN FORESTS, BEECH—FORMERLY THE CHIEF FUEL WOOD—IS NOW BEING REPLACED, AS THE OLDER STANDS COME TO BE CUT AND REGENERATED, BY THE MORE VALUABLE CONIFERS

The Piñon

BY LELA COLE KITSON

THEY called it the "Piñon" (pin-yone), those early adventurers from Spain who first penetrated into the great unknown wilderness that is today our Southwest; and the Piñon this little pine tree will remain as long as our border States contain a vestige of that liquid language which was their inheritance from the Conquistadores.

The Piñon is the Southwest's own tree—typical and characteristic of the country over which it ranges, and exceedingly loyal, also, inasmuch as it never strays beyond the borders of the Upper Sonoran Zone, which is, herbageously speaking, the Southwest's peculiar province. It is jealous of its boundaries, but is omnipresent within them, and may be found from the Pecos River of Texas in the east to the California Coast Range in the west, and from the northern limits of New Mexico and Arizona in the north to the Sonora and Chihuahua deserts in the south. Even the vast waste places west of the Santa Cruz Valley of Arizona are not too formidable for the Piñon. In this great stretch lie the Colorado and the Mojave deserts, but on the rims of these sinks, in sufficiently high altitudes, this small tree braves them both; it is the only

member of the pine family found west of the Santa Cruz until the Coast Range is reached—a region embracing many desolate thousands of square miles.

In appearance the Piñon is a small, rather scraggy tree, from 6 to 15 feet in height, with rough, dark bark, dark-green needle-shaped leaves, and small ovoid cones which have a remarkably wide spread when mature. The large, palatable seeds have a sweet, nut-like flavor, especially after having been roasted, and are gathered in large quantities for food every year. Stands where "piñones" are sold are as common a feature of Southwestern towns as the peanut and popcorn establishments of more northerly climes; but the vender of piñones is likely to be a small, brown Mexican boy with beseeching, big, dark eyes, or a broad-smiling Indian girl with a black mantilla draped over her sleek head, instead of a gentleman of Italy accompanied by a monkey.

The nuts are used for fattening stock in some districts, notably along the Continental Divide in New Mexico, where the trees flourish in such abundance that the region is known as "The Piñon Country." From this section considerable quantities of the nuts are shipped east for stock-



PICTURESQUE AGAINST THE SKY-LINE, ON HIGH ROCKY GROUND AND LOFTY PLAINS THROUGHOUT THE BORDER STATES, THE PINON FLOURISHES, ITS DARK BEAUTY CONTRASTING STRONGLY WITH THE SNOW-CAPPED PEAKS BEYOND



FLAUNTING ITS BRANCHES OF GREEN UNDER THE UNCHANGING BLUE OF THE NEW MEXICAN SKY, TWISTED AND GNARLED AT TIMBER-LINE, THE PINON GROWS, 11,000 FEET ABOVE THE SEA

fattening purposes, the husks being so thin and tender as not to trouble the digestive apparatus of the most refined Kansas City steer.

Cabeza de Vaca, first of the Spanish explorers to venture into the wilds of the Big Bend country of Texas—this in the year 1536—described the Piñon seed as one of the chief foodstuffs of the Indians he encountered in his wanderings. He wrote:

"Here the people ate the tuna (fruit of the prickly pear) and nuts of the pine, which grew on small trees of sweet pines. The cones were like little eggs, but the seed is better than that of Castilla, as its husk is very thin, and while green is beaten and made into balls to be eaten." This menu as a steady thing would not measure up to our dietetic standards today, but it evidently furnished de Vaca with the necessary sustenance and brawn to continue with his almost incredible adventures and hardships.

To the nomadic tribes of four hundred years ago, whose constant warfare left them little time or inclination for agricultural pursuits, the Piñon, with its unfailing supply of food, was an indispensable friend; but the more peaceful and advanced Pueblo Indians of the north also found it useful. Beyond the mists of antiquity, in those prehistoric times of which we know only the little that picture-writings on the walls of unearched ruins can tell us, piñones were a staple article, and from those days to these have figured prominently in the lives of the peoples of its chosen land.

Jars or basketsfull of the nuts are sometimes discovered in the unearched pueblos, laid aside by some cliff-dwell-

ing housewife remote centuries ago as a treat, perhaps, for the weekly meeting of the Lady Basket Weavers, or something for the brown babies to "piece" on between meals. The mysterious folk who lived out their cycle in those desert canyons have gone no man knows whither, but the descendants of the trees which supplied them with piñones flaunt their ragged little branches now, as then, under the unchanging blue of the New Mexico sky.

On high rocky ground, low hills, and lofty planes throughout the border States the Piñon flourishes. The weary Southwesterner who has gone far afield gazes with gladness in his heart at the first little shaggy pine trees marching down the slopes to meet him, for he knows that he is home at last—home, "west of the Pecos," and that is West indeed!

A Real Bear Story

While Olsen and Ranger Phillips were riding the sheep allotments the tracks of three large bears were noticed. A shepherd was told about the tracks, and he said:

"Seein' the tracks is nothing; I saw the bears. Was climbing up that mountain and when I got into those willows something grunted and growled just ahead of me. I pulled out my shootin' iron and looked; finally saw the bear's head above a log about twenty feet distant. I raised the gun to shoot and another bear ran past me, almost knocked me down. I looked and there stood the third one. Well—no d'—d bear can catch me if I've got twenty feet the start. I know I had my gun, but I have never been able to find it since."—*The Lemhi Ranger*.

Pine or Porcupine?

By W. T. Cox

WILD animals constitute a great asset in any well-managed forest. Occasionally some animals become a liability also. The charm of the forest is greatly enhanced by the presence of deer and other game and by the presence of beaver, squirrel, chipmunks, birds, and a long list of useful, harmless or nearly harmless creatures. Probably among the latter class should be rated the porcupine. This widely distributed citizen of the forest, variously known as "porkyhog," "quillpig," "pricklecub," and "porcupine," has furnished amusement for many a visitor to forest districts. He is not noted for his intelligence and certainly not for his speed, but his corpulent figure and comical ambling antics are interesting and at least mildly entertaining.

The Indian used porcupine quills for many purposes, such as sewing needles, baskets, war bonnets, and other novelties. The flesh of the porcupine is not distasteful and has saved many an unarmed traveler in the woods from exceedingly great hardship, if not from actual starvation. It is easy to kill one of these animals with a club, since they are not difficult to find in the winter season and may easily be approached within clubbing distance and with safety. The old idea that the

Minnesota he seems to give some preference to white pine, though he also girdles many thrifty Norway pines, jack pines, highland or white spruce, and sugar maples. The most thrifty, medium-sized trees usually are preferred. A ring of bark will be girdled at 20 or 30 feet above the ground, and then at various points higher up



ROOSTED HIGH

Porky has "taken to the tall timber" in search of a particularly succulent morsel of bark for his evening meal.



"PORKY" IN TWO CHARACTERISTIC POSES

All aribstle, he waddles down the woodland path, on devastation bent, incidentally delighting visitors to the park who may happen to catch a glimpse of him as he ambles along.

porcupine can throw its quills is, of course, erroneous.

A RAVENOUS APPETITE FOR BARK

As is well known, the porcupine feeds upon the bark of a variety of trees. He is not particular, but in northern

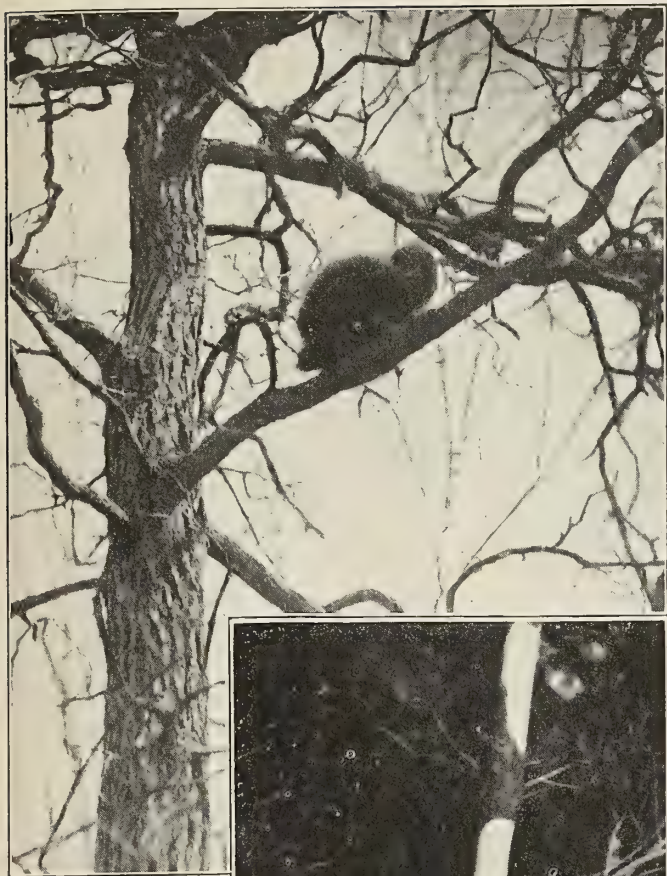
the surrounding territory are particularly liable to damage by insects, rodents, and other destructive agencies. This is easily accounted for from the fact that the comparatively small area of remaining timber attracts the animal life which formerly found its home in the sur-



"The Hanging Glacier"—Chelan National Forest, Washington

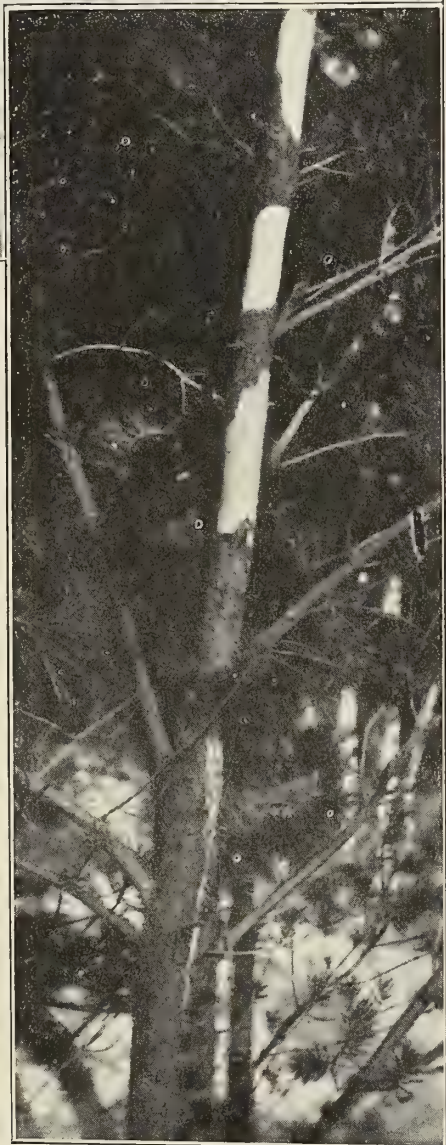


A Moss-Veiled Fringe of the Old Pine Woods of Florida



RESTING
AFTER
THE
EVENING
MEAL

Mute evidence that
it was a good one.
This is why "Porky"
must be suppressed.



rounding forest, now cut away. Itasca Park and Forest, at the headwaters of the Mississippi River, is a good illustration of this fact. This tract of one hundred and thirty million feet, in a district which once contained billions of feet of timber, seems to be the mecca for a disproportionately large wild-life population, some useful and attractive, some harmful.

THE PORCUPINE A LUMBERING FELLOW

The porcupine, which ordinarily is not very abundant and whose work is rather inconspicuous, has become so abundant at Itasca that it commands the attention of the park superintendent and other foresters engaged upon work in the forest. Recently, in marking trees for an improvement cutting, twenty-six forties were carefully gone over. Snow lay on the ground and it was easier to see porcupines than it would be in the summer-time, and the men were able to obtain a fairly accurate count of these animals and to determine what damage they were doing. On the twenty-six forties, seventy-six porcupines were seen, or an average of three to the forty. Since there are five hundred and sixty forty-acre tracts in this particular State Forest, it would seem that there must be in the neighborhood of sixteen hundred porcupines busily engaged in girdling trees on the reserve.

Careful note made as to the work of these animals showed that each one had recently girdled and killed on an average 4.9 white pine trees. The trees were of an average diameter of fifteen inches, representing the equivalent of 950 board feet of timber killed by each animal, or a total of 69,500 board feet on the twenty-six forties. This timber has a stumpage value of \$8 per thousand feet. It will be seen, therefore, that the porcupines of Itasca Park and Forest are killing each year approximately a million and a half feet of timber, worth on the stump \$16,264, or approximately 1.2 per cent of the present annual growth. They constitute a source of damage which must be reckoned with in the management of the property.

But it would not be advisable to exterminate the porcupine in a forest such as Itasca, which is visited by tens of thousands of people who are interested not alone in the trees, but in the wild creatures also. To wage relentless warfare upon such an inoffensive animal as the porcupine would seem cruel, and in fact a reasonable number of them should be in evidence, so that visitors may get an occasional glimpse of them shuffling across the trails or perched up in some lofty pine; but to allow this "highland beaver" to increase beyond his present numbers would be exceedingly unwise and even dangerous for the welfare of the forest.

Tree Legends for Children

Yggdrasil, the Ash

BY MARY ISABEL CURTIS



GGDRASIL—that is an ugly name; but that is what the Norsemen of long ago called their famous ash-tree.

Before anybody knew that the earth was round, the old Norsemen, who had some very strange ideas, believed that it was just a flat disk, like an island. This island was surrounded by an ocean, which was also a river, and on the outer edge of this river-ocean was a circular range of very high mountains. Beyond that there was nothing.

In the center of the island was a mountain out of which grew a perfectly tremendous tree. This was the ash, Yggdrasil. It was so tall that its branches spread out over the heavens and held up the sky and the stars and clouds, which otherwise, they thought, would have fallen to the earth. Its three roots reached far down below the world to a dark place, where the dragon Nidhogg gnawed on one of them unceasingly. But even though the dragon chewed the root, the ash-tree could not die as long as it was sprinkled daily with the water of life. This kept it always fresh and green. And it was necessary that the ash-tree should be kept from withering, for the fate of all the gods in Norway depended on the life of Yggdrasil.

Around the trunk of the tree was Midgard, the dwelling-place of the people of the earth; and high above the earth, among the branches of the ash, was Asgard, where the Norse gods and goddesses lived in golden palaces which shone with star-like jewels.

One of the goddesses, who was named Iduna, had a beautiful dwelling in the green branches of the world-tree. She it was who every evening sprinkled the tree with water from the well of life; and it was she who every morning gave the gods the apples of eternal youth to eat, because they, like Yggdrasil, had to have something to renew their immortality.

One evening, while Iduna was busy in the house preparing her apples to give the gods next morning, she heard a voice outside the castle calling her.

"Beautiful Goddess," it said, "come out quickly and let me show you a tree bearing fruit just like your immortal apples."

Iduna knew there were no other apples just like hers, but she was curious to know what any one could mean by saying such a thing; so out she ran to see. All at once the storm wind roared through the trees and an evil giant disguised as an eagle swooped down on Iduna and carried her off to the outer rim of mountains on the edge of the world.

Then the gods of Asgard began to grow old and gray without Iduna's apples, and the leaves of the ash-tree withered because she was not there to water it. The great ones sought for her in vain. They questioned all the birds and beasts, but could not find a trace of the lost goddess.

At length a small bird fluttered in among the gods and told them he had just come from the edge of the world, and had seen Iduna there. As soon as they learned this, the gods sent a messenger to rescue her; and because she was on the other side of the river-ocean, the messenger took the shape of a falcon, so that he might fly across the water.

He found Iduna sitting, sad and lonely, at the door of a small log cabin and, alighting at her side, he told her he had come to take her home. It happened, fortunately, that the wicked giant was nowhere in sight, and the messenger wasted no time looking for him. He changed Iduna into a nut, in order to carry her more easily, and holding the nut in his claw he flew swiftly home with her to Asgard.

That night the gods had a great feast to celebrate Iduna's safe return, and the Northern skies were almost as bright as day.

When we see the beautiful Northern Lights we know it is the Aurora-Borealis, but the Norsemen of long ago would have said:

"See what a great banquet the gods are having tonight in Asgard!"

America's Transition from Old Forests to New

By E. T. ALLEN

II. THE PAST

THE stewardship which you and I and our fathers before us have exercised over the vast land given us, with its stored wealth and capacity for the replacement thereof, has of necessity differed from that in smaller countries, more quickly permeated throughout by the influences which from time to time arise. With them these influences have been largely of the period, arising from conditions fairly similar and universal, having fairly like and widespread results. With us they have been profoundly determined by the geographical advance of a rapidly growing population. Only now, for the first time, have we reached a position to regard this in retrospect, knowing its influences to be past or passing and appraising them mainly to clarify the situation that remains.

Now, however, our westward advance has paused long enough, since arrested by the Pacific, to begin to acquire the interest of history which men accord to events in which they did not participate. As we find fascination in the story of America's golden age at sea, when our whalers and traders built honor abroad and patriotism at home, or the story of the drift over the Alleghenies and the settlement of the Middle West, we are beginning to find it also in the story of the Argonauts, the covered wagon and the Oregon Trail.

These we call the brave days, and rightly. They were the days of men and women brave enough to forego security, comfort, and the ties of home, and to face all the uncertainty, hardship, and danger of the frontier for the building of the nation. And in the building they spared the material at hand no more than they did them-

selves. The forest, the buffalo, the land—all that nature yielded—did not make the task too easy.

THE DAYS OF GOLDEN GOOSE KILLING

In their footsteps followed America. As the thirteen colonies overflowed and as this new empire came to the ears of a still more crowded Old World, population and civilization kept the old course across the Alleghenies, paused to complete the filling of the immense basin of the Central West and to build Chicago, dashed wave after

wave over the Rockies, and swept thinly on again until banked at last where the pioneers had halted, on the shores of another ocean. In less than 300 years a hundred million had conquered 3,000 miles of wilderness; always hungry, always building, always struggling to establish civilization where they found only mountain and plain, always prodigal



ONLY AFTER LONG TIME HAS PASSED, AND THEN INADEQUATELY, DOES THE STRIPPED AND NEGLECTED FOREST RECOVER TO AFFORD ANOTHER FRONT OF MINOR OPERATIONS, AGAIN MOVING WESTWARD AT A RATE DETERMINED BY THE ORIGINAL CUTTING. HERE WE GET A VIEW OF LOGGED-OFF SLOPES IN NEW HAMPSHIRE

of the land and its resources as long as plenty more lay beyond the ranges. Raleigh's tobacco growers impoverished Virginia and Maryland soil until much has returned to forest; wheat farmers cropped the Dakotas without returning anything to the land; the builders stripped the forests to make homes for them all. This was the period of unrestrained exploitation, of golden goose killing, if you will; but it built America. And now it is history, with all its achievements for our pride forever and all its errors for us gratefully to redeem; for no new lands lie beyond the ranges.

Such also has been the progress of forest exploitation, with features of its own especially interesting in a survey of a 300-year period which enables us to see the



PRODIGAL OF THE LAND AND ITS RESOURCES AS LONG AS PLENTY MORE LAY BEYOND THE RANGES, THE PEOPLE SWEEPED FROM THE SNOW-CLAD HILLS OF NEW ENGLAND ACROSS THE ALLEGHENIES, DASHING OVER THE ROCKIES TO HALT ONLY AT LAST ON THE SHORES OF ANOTHER OCEAN. THE LUMBERMAN FOUND ONLY THE FORESTS THAT HAD ESCAPED THE CONFLAGRATION OF THE PIONEER, FOR FIRE HAS EVER BEEN A MORE SERIOUS MENACE TO THE FOREST THAN THE AX. THE DEBRIS HE LEFT BEHIND HIM GAVE EVEN GREATER OPPORTUNITY FOR DESTRUCTIVENESS



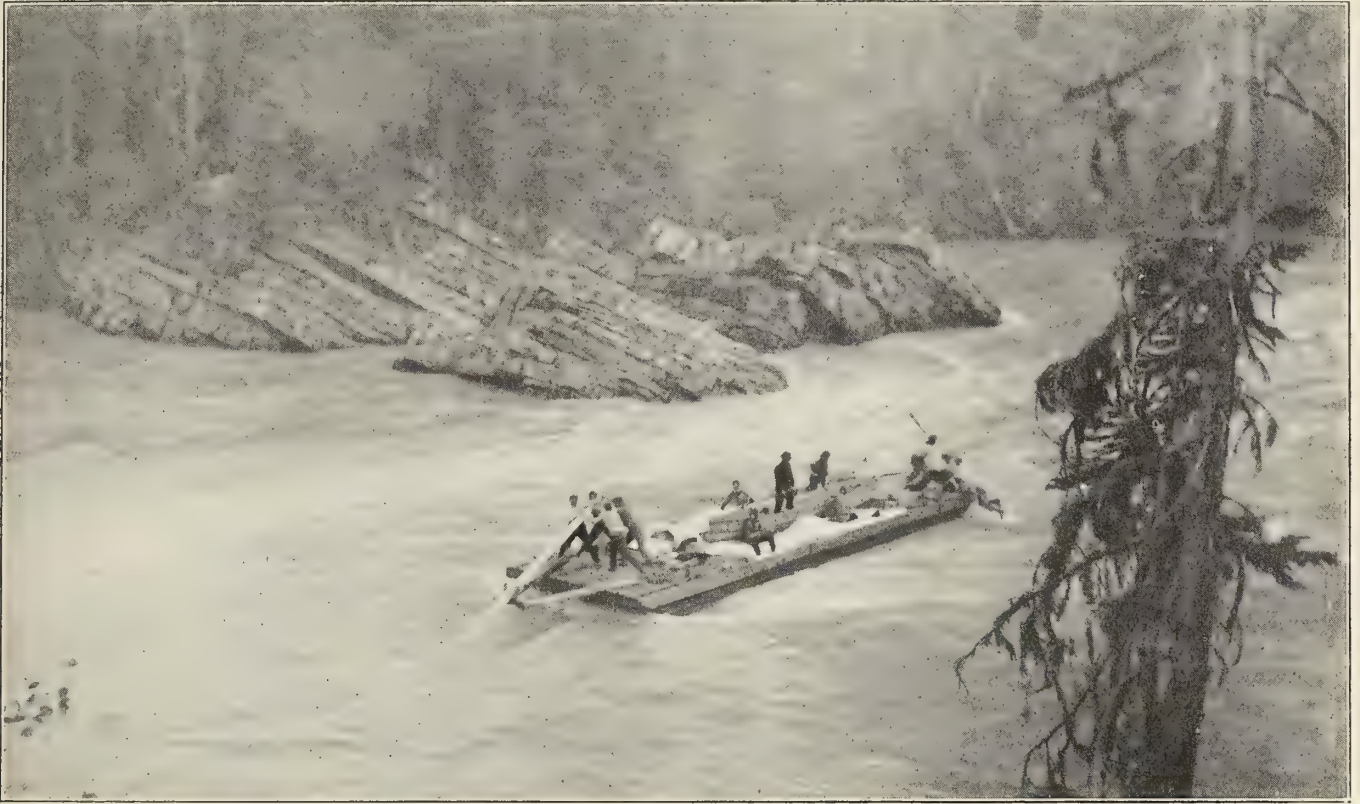
THE LUMBERMAN'S JOB, DECLARES MR. ALLEN, HAS BEEN TO SUPPLY BOARDS AS THE NATION'S BUILDERS NEEDED THEM. HE COMPETED WITH HIS FELLOW-LUMBERMEN IN ABILITY TO DO THIS—NOT A FINANCIAL OR COMMERCIAL PURSUIT, BUT ONE OF HANDLING MEN AND LOGS. THE DEMAND WAS FOR TIMBER AND MORE TIMBER, AND WHAT HE EARNED WAS FOR PERSONAL SERVICE IN MAKING THE WILDERNESS YIELD A COMMODITY OF CIVILIZATION WITHOUT REGARD TO WASTE. RUTHLESS IN PRODUCTION, HE DID NOT LOOK BEYOND

cyclical operation of time in the growth of both trees and policy.

The original forests of the United States are estimated to have covered 822 million acres, or roughly a third its area. Through these the lumber industry has for three centuries moved steadily westward, except for an offset from the Lake States to the south. At any given time between its two seacoast extremes it has been, as it were, on the eastern edge of the untouched virgin growth and the western edge of a more or less stripped

FIRE MORE DESTRUCTIVE THAN THE AX

For at all periods fire has been more destructive than the ax. The lumberman found only the forests that escaped the conflagrations of the pioneer, the herdsman, and the hunter. With him came a greater and even more careless population, to which the debris of his operations gave all the greater opportunity for destructiveness. After he moved on, indifference while the supply he followed was considered inexhaustible, as well as a vague impression that trees can be regrown only by intensive



IN A PERIOD OF LESS THAN THREE CENTURIES THE CONQUEST OF THREE THOUSAND MILES OF WILDERNESS WAS ACCOMPLISHED BY A PIONEER PEOPLE, STRUGGLING TO ESTABLISH CIVILIZATION WHERE THEY FOUND ONLY MOUNTAIN AND PLAIN. EVER GAMBLING WITH THE WEATHER AND THE TRICKY RIVERS THAT FLOATED HIS DRIVES, A PECULIARLY AMERICAN COMBINATION OF WOODSMAN, ENGINEER, AND SUBLIMATED MECHANIC, THE LUMBERMAN FOUNDED THAT GREAT INDUSTRY DESTINED TO GO DOWN IN HISTORY AS A VITAL FACTOR IN THE BUILDING OF THE NATION

and depressing cut-over area, while in its more remote wake time has converted once similar areas into lands occupied by agriculture, again returned to forest, or kept desolate by fire.

In the main its connection with national development—the same connection which has built it to be our greatest single manufacturing industry—has made its chief operations march closely with this development, but with this difference, that it has not held its conquered territory but must increasingly send supplies rearward, as it also serves on an advancing front. Only after long time has passed, and then inadequately, does the stripped and neglected forest recover to afford another front of minor operations, again moving westward at a rate determined by the original cutting, as we see the third or fourth crop cut in New England and the second in the Carolinas—that is, if fire does not prevent.

European methods of cutting and planting, led all to consider the cut-over land worthless and no one's responsibility; so it was abandoned to recurring fire, which all too often has damaged or completely destroyed the natural reproduction which otherwise would have completed the cycle. It is estimated that as much of our virgin timber has been burned as has been cut, and that even now lumbering goes over but 5 million acres a year, while fire sweeps 8 to 10 million, much of which, however, is unmerchantable young growth.

During this three-century migration, now about ended, the lumberman built the traditions of a transient industry which still govern him and us to a great extent. Until just before its close he was not a business man, not a salesman, not a land proprietor, but a peculiarly American combination of woodsman, engineer, and sublimated mechanic. His job was to supply boards and timbers as fast as the nation-builders needed them. He competed

with his fellow-lumbermen in ability to do this; not a financial or commercial pursuit, but one of handling men and logs. He gambled inveterately with the weather and with the tricky rivers that floated his drives, but he was not a speculator. The raw material was virtually without cost and without profit. The land itself he did not consider, nor did any one else. His product was not sold by merchandising effort, but bought by those who demanded it, as they could get it to their own best advantage. His pay was for his personal services in making the wilderness yield a commodity of civilization. His processes were wasteful of material civilization did not want and would not pay for. Beyond that he did not look.

It is only fair to say, however, that speculation was a secondary consideration in the following hegira to the south and west. The industry had to move on. The nation wanted lumber. Pioneer lumbermen had long been serving the growing needs of the new fields. On the Pacific coast some of them, straight from New England in the '80's or earlier, revived for a time the old spirit of Newburyport and Gloucester, building beautiful clippers, which with lumber cargoes and trading captains once more carried the flag into forgotten ports. Most of the operators who joined these or who went South, as the Lake States began to "cut out" and the market to stand a long rail haul, sought mainly to continue their



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IN ITS CONNECTION WITH OUR NATIONAL DEVELOPMENT, LUMBER PRODUCTION HAS GROWN TO BE OUR GREATEST SINGLE MANUFACTURING INDUSTRY AND ITS MANNER OF OPERATION MARCHES CLOSELY WITH THIS DEVELOPMENT AS IT CONSTANTLY INVADES NEW TERRITORY ON AN EVER-CHANGING FRONT. MOST MODERN EQUIPMENT SERVES TO SEND ITS SUPPLIES BACK, THIS BEING A TYPICAL LUMBER-CARRIER LOADING AT A PACIFIC COAST PORT

THE RUSH FOR NEW TIMBER KLONDIKES

These conditions changed little until the whole future of the industry was profoundly altered by an accident without precedent and, as it later appeared, unlikely to be repeated. The vast and mushroom growth of the Middle West, with its tremendous wood consumption, found the northern pineries at its very door. Even this short transportation was served by the Mississippi and the Lakes. Exhaustion was rapid and lands, acquired not for speculative value, but in rivalry to control raw material to afford profit in conversion, surprised their owners by becoming worth fortunes in themselves. Lumbermen who had always expected to work hard for their dollars called this the "sugaring off," borrowing the term from the maple-sap boiler, and concluded it to be a providential way of rewarding their efforts, which could reasonably be depended upon, now that Providence had discovered it. Not only stumpage values, but also stumpage speculation, were born in the United States. The rush was on for new timber Klondikes.

useful vocation, the only one they knew and one that they were proud of, although at the same time, no doubt, carrying legitimate hopes of another "sugaring off" eventually.

It is also the general testimony of lumbermen that their own judgment of the future, tinged by the tradition of inexhaustibility of the fields ahead, was perhaps a lesser influence than the broadcasting by mistaken forestry enthusiasts of the statement that our forests would all be gone in 30 years. This statement astonished them; but, if true, it meant they must "get theirs" promptly.

THE TIMBER GAMBLE IN THE WEST

Thus they invaded in force the last stands of virgin timber, bounded by the Pacific and the Gulf, and knew they could not move again. Entirely aside from speculative motives, they needed to acquire a sure supply. Their predecessors were similarly forced to enlarge their holdings in self-protection. Rivalry and competition were inevitable and once more stumpage evidenced a coming rise. Southern pine soon went into private hands, with

its value, whether high or low, to be determined by a prompt near-by market. The struggle for the magnificent forests of the Pacific coast, half the nation's remaining supply, was a gamble upon an only seeming precedent. Events were to show that, instead of repeating its Lake States' experience, the industry was undertaking to carry a lifetime's supply of raw material in the face of wholly unforeseen obstacles.

This period of occupying the western forests, in the decade closing the last and beginning the present century, was the most defined and pregnant of American forest history. For the first time the public itself participated actively, not only governmentally, as we shall soon see, but also as individuals. Under the loose land laws and "land conscience," thousands of every vocation took up timber lands for disposal to the lumbermen who were blocking up holdings. The clerk, the doctor, the farmer's boy or girl, and every other reputable citizenship type paid some better-informed "locator" for information of good vacant timber, complied nominally with the law, and bargained with rival purchasers. They used their homestead rights for their advancement just as did their prototypes in the prairie states. "Uncle Sam is rich enough to give us all a farm." Since we did not get our farms, we are equally entitled to a timber claim." The inevitable middleman, far more numerous than the lumbermen, took profits from both sides. Claims at first bringing \$300 went to \$3,000 or even \$20,000. The lumbermen paid well in the end. And to do so they no longer, as in the past, merely reinvested the proceeds of their business to keep a small material supply ahead. It was the last chance and they borrowed. Banks were imbued with the spirit and lent freely. Bonding companies had their heyday, and the risk was passed to many small investors in the East.

ROOSEVELT'S PEN MIGHTIER THAN THE AX

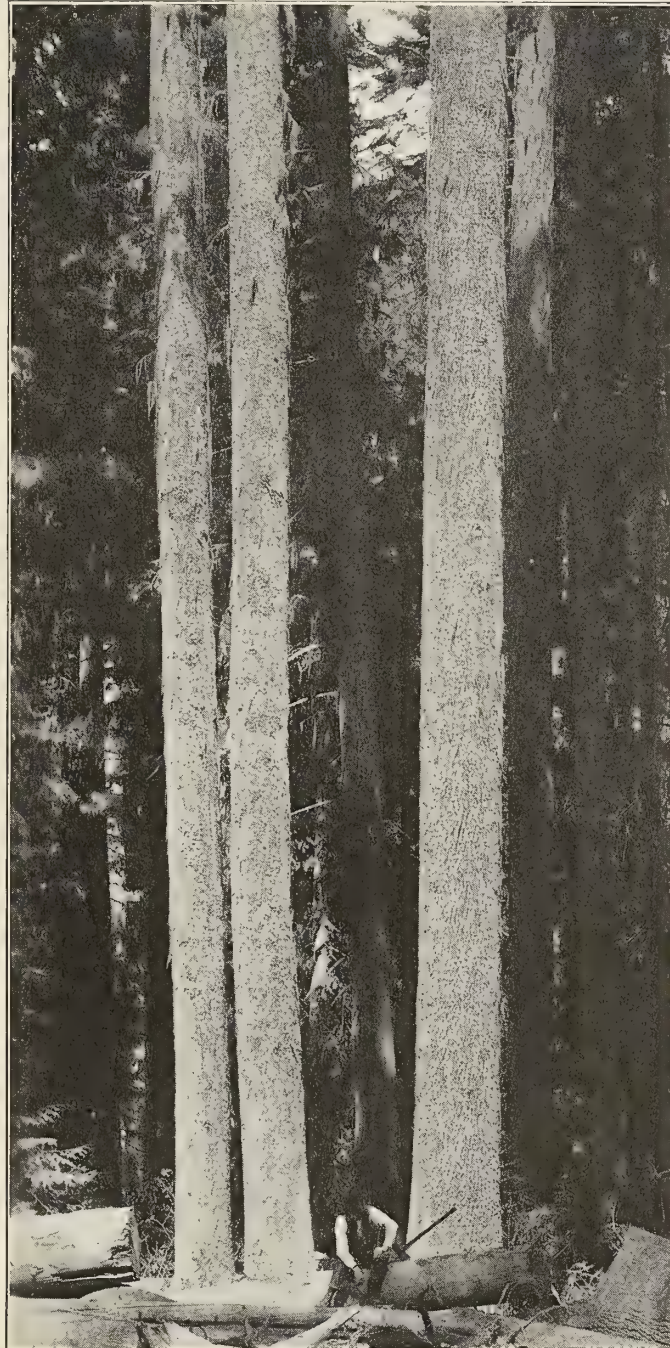
For was not the Government guaranteeing the profits? Equally impressed by realization that the last stand was reached, it sought to neutralize its statutory give-away

policy by executive action, reserving as public forests such lands as its agents could find first in the general competing scramble. The forest reserve system inaugurated by Cleveland was vigorously enlarged until, when the West, indignant at this disturbance of its "development" and of taxation prospects seen in private ownership of hitherto-profitless wilderness, persuaded Congress to withdraw the Executive's power, Roosevelt signed his last group of proclamations just as the law took effect to stop him. The forest states protested against differentiations from other public land states that had been permitted to develop and tax their resources for their own development. This establishing of a core of public forests was, nevertheless, the greatest constructive step toward an adequate policy yet taken by the nation, and there are few today who do not applaud its wisdom. It also, had, however, its effect of stimulating speculation. It accentuated the expected shortage and threatened, should the administrative policy be of strict conservation rather than of use, even to hasten the shortage of available supply. Belief was general that the chief purpose of public ownership was to

frustrate monopolistic extortion in the distant future by large concerns on their way to control of the private supply.

ENTER THE FORESTERS

This brief era was also one of much other somewhat groping forestry preparation. State forestry departments were created if but grudgingly financed. From



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AT ANY GIVEN TIME BETWEEN ITS TWO SEACOAST EXTREMES, THE LUMBER INDUSTRY HAS BEEN ON THE EASTERN EDGE OF SUCH UNTOUCHED VIRGIN GROWTH AS THIS, AND THE WESTERN EDGE OF A MORE OR LESS STRIPPED AND DEPRESSING CUT-OVER AREA



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THE IMPRESSIVE GRANDEUR OF VIRGIN SPRUCE WOODS. THE ORIGINAL FORESTS OF THE UNITED STATES ARE ESTIMATED TO HAVE COVERED 822 MILLION ACRES, OR ROUGHLY A THIRD OF OUR AREA

coast to coast forestry schools opened to teach the new profession, supposedly to be in early demand by private and public owners alike, to meet the rapid exhaustion of timber. For the most part, in the beginning, they taught European tradition that proved unsuited for American application; but even then they established a groundwork, an interest, and a new man-product available for molding by events; and the Government employed the graduates, giving a chance in the woods to unlearn much they had learned and discover what could and could not be done in America.

Meanwhile our actual treatment of the forest suffered little change. The professional foresters were absorbed in educational propaganda and administrative tasks sel-

dom silvicultural. On the vast Government reserves there was little sale of timber; much work in organizing fire prevention, eliminating hastily included agricultural lands, examining doubtful private claims, leasing grazing and other privileges. The men in State employ were even more restricted to propaganda to enlist public interest and appropriations.

Few were employed by lumbermen, for the time for their service was not ripe. They had not learned to offer feasible American compromises, but, like the lumbermen, were wrapped in traditions of other times and other conditions; nor, had they offered them, would there have been much response. The portion of the industry which had moved into new fields had too much, not too little, material for its facilities and market, and to help carry its investment was obliged to cut wastefully to make enough high-grade lumber that would stand the long haul to the consumer. Even then it was losing money. On the other hand, the lumbermen in the old vanishing fields encountered this competition, which the public would have been the last to forego by paying the cost of conservative methods and of husbanding the nearest supply—a course certain to have been regarded as monopolistic.

FIRST GLIMPSE OF SHORTAGE STIMULATES GREED

In short, ownership of the forests, with its theoretical control of price, and not their wise use or their reproduction, was the first subject of general reaction to the first glimpse of shortage. Our traditions of 300 years were being upset, but only partially and sometimes erroneously, and we encouraged or condoned more waste than ever before. Meanwhile fire was unchecked everywhere, but increasing in the West with the increase of settlement and activity, while we had not learned that the very density of the western timber, still regarded as virtually inexhaustible, made a hazard elsewhere unknown; or that nature, in an evolutionary process of ages, had made fire, rather than Old World forestry methods, the key to the reproduction of western tree species with marvelous swiftness and certainty. So, in the summer months, navigation for miles out into the open Pacific was impeded by the smoke from blazing forests.

[EDITOR'S NOTE.—This is the second installment of Mr. Allen's article. The third will appear in an early issue.]

BOY SCOUTS!

Readers of *American Forestry* who know of local Boy Scout troops which are interested in promoting forestry will confer a favor upon the Association by sending the names of the Scout Masters to the American Forestry Association, 914 14th Street, Northwest, Washington, D. C.



EDITORIAL



A TIME FOR PROTEST

ECONOMY often parades in false garments. And thus disguised it not uncommonly commits monstrous acts. Sometimes from pure avarice; sometimes for political glory. When these acts threaten adversely thousands and millions of people, it is time to protest.

A case in point is the great State of California, which for the past ten years has been in the vanguard of states in reforestation, forest-fire protection, and in setting apart state forests. Out of a clear sky, now comes a proposal practically to abandon the state forest work. Governor Richardson, elected on an economy platform, has submitted to the state legislature his budget, which would reduce the amount of money available for state forest work from \$100,000 to less than \$35,000. This action will emasculate the State Forest Department, reducing it to a small office force, with no funds for field-work. Under the Governor's budget, out goes the forest-fire work of the state, out go state forest nurseries, stopped is the acquisition of state forests, and discontinued is the maintenance of the Humboldt Redwood Park.

Governor Richardson's program will disqualify California for co-operation with the Federal Government in fire protection, under which it has been receiving biennially \$45,000 of Federal co-operative funds. It will in effect wipe out completely the fire-protective organization of the state, including not only the work heretofore done with Federal aid, but co-operation with twenty-six counties of the state and with many public organizations interested in the welfare of California.

The Governor's proposal warrants the protest of the Nation. Ex-Governor Pardee has started it by resigning forthwith as chairman of the California State Board of Forestry. But the interests involved transcend state lines. One-half of our remaining timber supply is on the Pacific coast. Thirty per cent of this reserve is in California. It is the future wood supply of the people of the United States. It is the end of our virgin forests, and the most beautiful end, to which hundreds of thousands of people from every state in the Union flock every year.

Surely the day of political Neros has not returned.

A NEW INVESTIGATION

THE President of the Senate of the United States has appointed a committee of five of its members to investigate the state of our forest cupboard, and to submit a report not later than April 24, 1924. The members of the committee are Senators McNary of Oregon, Couzens of Michigan, Moses of New Hampshire, Harrison of Mississippi, and Fletcher of Florida. This action is a result of Senate Resolution No. 398, submitted early in January by Senator Harrison of Mississippi and subsequently agreed to by the Senate. The resolution directs the committee "To investigate problems relating to reforestation with a view of establishing a comprehensive national policy for lands chiefly suitable for timber production, in order to insure a perpetual supply of timber for the use and necessities of the citizens of the United States."

These words have a sound not altogether new. It will be recalled that this problem of a national forest policy has already been investigated to a point where initial action with respect to certain phases of the situation is clear, imperative, and generally agreed upon. In 1920, it will be recalled, the Senate called upon the United States Forest Service for an investigation of the forest situation, and received a report which stands as an uncontrovertible basis for the initial groundwork of a national forest policy. Subsequently a committee of the Chamber

of Commerce of the United States toured the country, holding comprehensive hearings and making exhaustive inquiries into the state of our forest property. More recently the House Committee on Agriculture has for almost a year been holding hearings on the same subject.

In view of the amount of investigation which has already been done, it will be only natural if many, upon first thought, consider a new investigation as unnecessary and obstructive to immediate forest legislation. AMERICAN FORESTRY believes this to be an unwarranted judgment. It is true that past investigations have made perfectly clear the need and the course for immediate action in respect to certain basic principles of a national forest policy. There is, for example, no disagreement as to the need for more effective forest fire protection, more extensive research in relation to growing forests and their utilization, in increased acquisition of forest lands by the National Government, and in the extension of aid by the Federal Government to states and individuals in the growing of timber crops.

On the other hand, there are other questions of equal moment in a complete forest policy which have not yet been cleared up. Among these is the question of the extent to which Federal regulation of private forests and forest lands is desirable and necessary; another is the determination of the amount of forest lands which.

as a national safeguard, should be in public forests. At the present time approximately 20 per cent is in public forests. Should our national objective be 30, 40, 50 per cent or more? A third question is the most desirable form of Federal policy in respect to the administration of all Federal forest lands. At the present time forest holdings of the National Government are distributed among several departments, each of which follows its own policies of administration and protection. A fourth question which may be mentioned as badly in need of elucidation is that of forest taxation, which by many is rated as one of the most important planks in an all-inclusive forest policy.

The bill introduced in Congress last month by Representative Clarke would meet at once certain problems, the

solution of which has been clarified by previous investigations. It offers an initial step which may and should be taken at once, but it does not provide for a complete or final national forest policy. Some of the larger questions remain to be cleared up, and the field of greatest usefulness for the committee in question, we believe, is a specialized inquiry into those phases of the situation. The documentary groundwork for a national forest policy is already at hand, but the new Senate committee has before it a very definite opportunity for building upon that groundwork and of hastening progress toward a more complete and final forest policy. In view of the field of possibilities, it is, therefore, premature to make advance judgment as to the worth of this investigation. Its results will best answer that question.

DEALING WITH FIRE

FOR two long, weary months last summer the Minnesota Forest Service, comprising some sixty forest rangers, supplemented by several hundred emergency fire-fighters, waged day and night war against the greatest fire peril in the history of the state. These men stood between 1,200 insidious fires on the one hand—fires fed by a desiccating drought and fanned by hot summer winds—and hundreds of communities, thousands of lives, and millions of dollars' worth of property on the other hand. The fire soldiers won. Their organization may not have been perfect. Under the stress of oncoming flames and wind-driven smoke, it is superhumanly impossible to organize local communities to function with the nice orderliness of school children at a fire drill. But the fact remains that the fire-fighters won, and that the state was spared a catastrophe which might easily have paled into insignificance the great Hinckley or the great Cloquet and Moose Lake fires.

With the thermometer hovering around zero and the North woods white with snow, Minnesota forests are still in danger. What has been termed a "political forest fire" has been smoldering and threatening to burst into flames. There is a movement on foot to reorganize the State Forest Service. It has been charged that the State Forester and his men are inefficient. Supporters of the service declare the movement is directed by special interests, with an eye on state timber, and by politicians hungry for the political patronage obtainable by making the State Board of Forestry a political board. The legis-

lative committee of the Forestry Board has prepared a bill, called the "Board Bill," which, if passed by the Legislature, would safeguard the board against domination by political and special interests.

Irrespective of the merits of the charges and counter-charges, the people of Minnesota cannot lose sight for one moment of the danger of a backward step in the handling of its forest problem. There is the ever-increasing danger of an annual conflagration, sweeping over the whole northern portion of the state, wiping out towns and villages, destroying lives and property, charring scenic beauty into unsightly desolation, stifling a growing tourist trade, annihilating wild game and wildlife habitation, and burning out its settlers. In no state in the Union is the forest-fire menace of greater moment than in Minnesota. It is unthinkable that the people of the state will do other than stand firmly by three forest principles which underlie their future welfare: An independent State Board of Forestry, wholly removed from politics and properly safeguarded against influence by political and special interests; annual state appropriations adequate to permit the State Forest Service to meet the recurrent fire menace; and a conservative and far-sighted policy in the handling not only of its reserved state forests, but its unreserved 600,000 acres of timber, which the state is now, unwisely we think, disposing of at the rate of almost 40,000 acres a year, on the plea of the need of raw land for agriculture.

AN IMMEDIATE PROGRAM OF FORESTRY

ON February 8 Representative Clarke, of New York, introduced into Congress a bill that marks a long step forward in the forestry movement in this country. While action on this bill by the present Congress cannot be hoped for, its provisions set up a practical program for forestry on which all who recognize the necessity or desirability of public action to maintain timber supplies and safeguard our forest lands against devastation can

unite. Every friend of forestry—and that should mean every good American citizen—ought to take note of this bill, understand what it proposes, and give it his support.

The bill does not attempt to solve our forest problem at one stroke. It apparently recognizes that the problem of forestry is too large a public problem to be solved out of hand and that it must be attacked piecemeal. The country is not yet agreed on how to strike at all its main

roots, though the problem in its entirety is urgent and the evil consequences of failure to solve it are becoming yearly more accentuated and more imminent. Even among those who take this view, counsels have been divided as to what should finally be done. But these divisions do not affect the new program, its scope being limited to courses of action which do not involve the more controversial issues.

Essentially this bill builds on foundations already established and expands accepted principles embodied in past legislation, and thoroughly tried out, rather than ventures into new fields. It may well be called a "six-point bill." Briefly, these six points are:

(1) Larger co-operation of the Federal Government with states to stop forest fires, along the same line as the present co-operation under the Weeks Law, but coupled with the explicit provision that this shall have in view "the systematic renewal of forest growth and the continuous production of timber." The Secretary of Agriculture is empowered to make the co-operation conditional upon compliance on the part of the states with such requirements as he may find to be essential, in so far as forest fires are concerned, for attaining this end.

(2) Study of forest taxation as related to timber-growing and perpetuation of forests, and of practicable ways to make possible insurance of forest properties against fire, with authorization to the Secretary of Agriculture to withhold co-operation in fire control from states whose tax laws work inimically to the commercial growing of timber on forest lands.

(3) Co-operation of the Federal Government with states for the supply of forest tree seeds and plants, to be used effectively and in accordance with the require-

ments found essential by the Secretary of Agriculture for reforestation.

(4) Advice and assistance by the Federal Government, through co-operation with states or other local agencies, to farmers in growing timber crops or protective wind-breaks and shelter-belts, and in improving their woodlots.

(5) Authorization of increased purchases of lands by the Federal Government for National Forest purposes under the provisions of the Weeks Law, passed in 1911.

(6) Authorization of more extensive research by the Forest Service in the interest of better forestry and better use of forest products.

This six-point program is so reasonable, moderate, and essential that, but for the present financial exigencies of the Government and the consequent difficulty in putting through any legislation that contemplates increased expenditures, its early enactment would seem almost assured. The bill itself does not make appropriations, but merely authorizes them, to a total of \$3,800,000 annually, of which \$2,000,000 is for buying forest land. In reality the entire amount is not merely moderate, but, in comparison with the magnitude of the public interests affected and the burdens already borne by the country as a direct result of forest depletion, so small as to be of almost negligible consequence. The fact of the matter is that forestry cannot be had without paying for it, and the unanswerable argument in favor of paying for it is that the public pays far more heavily for the lack of forestry than forestry would cost. The sooner the Clarke bill can be passed, the better for the country. Readers of AMERICAN FORESTRY should keep this bill in mind.

THE PUBLIC'S INTEREST

IN a paper recently presented before the Western Forestry and Conservation Association, Chief Forester Greeley set forth his position on what the public should expect of the timberland owner. Many of the lumbermen of the Northwest seem to have found the Forester's views on this subject disturbing, not to say heretical. Yet they are in substance merely a reaffirmation of a viewpoint which he has consistently maintained and which, indeed, is one of the foundation principles of his program of forestry for the nation.

Fortunately, Colonel Greeley's full appreciation of the difficulties and problems of the lumbermen is so clearly understood by them that the industry will, it can confidently be hoped, give open-minded consideration to his views, even when they are not wholly palatable. If the matter is approached in a reasonable spirit of give and take and with honest willingness on both sides to seek what paramount public interests necessitate, an ultimate solution in which all can acquiesce will be worked out.

"The main thing," said Colonel Greeley in explaining what a national policy should include, "is to break the jam, to get something started, to find a fair basis on

which the public and the forest industries can put over the most obvious and necessary things.

"It is my conviction that the starting point has got to be the right of the public to tell the logger that cut-over land, when he is through with it, must be left in a productive condition; that in the process of converting a valuable natural resource on these lands into cash, reasonable provision for a future growth of timber must be made and its cost absorbed as part of the logging operation.

"No one can foresee just what will become of the logged-off forest land of various kinds and in various locations. The public can make no guarantee that any individual can carry cut-over land and obtain a profit from future crops of timber. It cannot require the timber-owner to hold his logged-off land. The owner may hold the land; he may sell it if he has an opportunity; he may let it revert to the state for non-payment of taxes; he may trade it in to the Government in return for National Forest stumpage. The public is not concerned with who owns the forest land; it is concerned with the

[Continued on page 184]

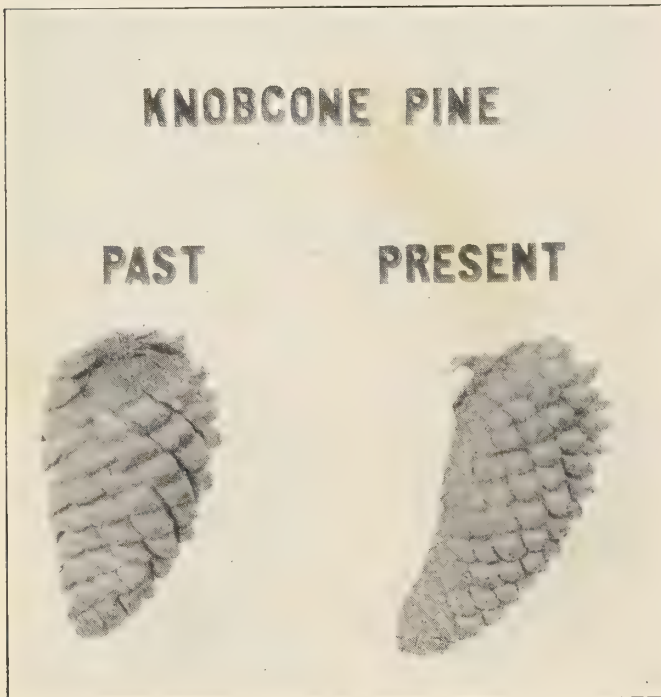
An Ancient Pine Cone

BY WOODBRIDGE METCALF

ONE day last fall, as I was entering the campus, a man introduced himself as Mr. Joseph Possewig and, handing me a very ordinary-looking pine cone, said: "I think I have found something which will interest you. Can you tell me what it is?" On closer inspection the cone seemed to be somewhat heavier than is common for the species, but looked typical enough; so I told him I thought it was Knobcone pine (*Pinus attenuata*), but that it might be Monterey pine (*Pinus radiata*). The fact that a few of the upper scales were missing and

Geology Department, who pronounced it the best fossil cone he had seen. He estimated that it had been in the ground between 40,000 and 50,000 years.

When one looks upon this little cone and realizes that it was over four hundred centuries ago when it grew among a whorl of similar cones, on a tree probably on Moraga Ridge, where its descendants still grow and produce cones exactly similar in appearance, it gives one a new understanding of the periods of time necessary to bring about marked evolutionary changes. The accompanying photograph shows the cone of 40,000 B. C. and its prototype of 1918 side by side.



that it was a little dirty made identification somewhat difficult, and I asked if he could not get me a more perfect specimen, with some foliage from the tree.

At this he laughed and said: "I found that cone yesterday while digging a well near the corner of 30th Street and Telegraph Avenue, Oakland, California. It was imbedded in solid clay subsoil 42 feet below the surface of the ground. I would like to give it to you for your forestry collection." I thanked him and carried the now precious specimen into the herbarium room to compare it with other specimens, and the more I looked at it the more I marveled that a thing so old as it must evidently be could be so remarkably preserved. Close examination showed it to be dark brown in color where the scales had broken off, with a luster indicating a slight carbonization. At first glance, however, one could see no difference between it and a cone which had lain on the ground through a rainy season.

Since that day I have shown it to Professor Jepson, of the Botany Department, who agreed that it was in all probability from a Knobcone pine, and to Dr. Clark, of the

A Strange Superstition

Residents of Oyama-machi, a shop district of Tokio, being awestricken by a series of deaths among shopkeepers, consulted fortune-tellers as to the cause of their calamities. They were told that the deaths were caused by the "spirit" of a ginkgo tree "angered by the cutting down of another ginkgo tree in the neighborhood." According to the story the male ginkgo tree, which was accustomed to meet clandestinely the female tree, was cut down to make room for the monopoly bureau, and its "spirit," in rebellion, avenged itself upon the shopkeepers of the district by causing a series of five deaths among them.



A LIVELY LOOKING ROOT FREAK

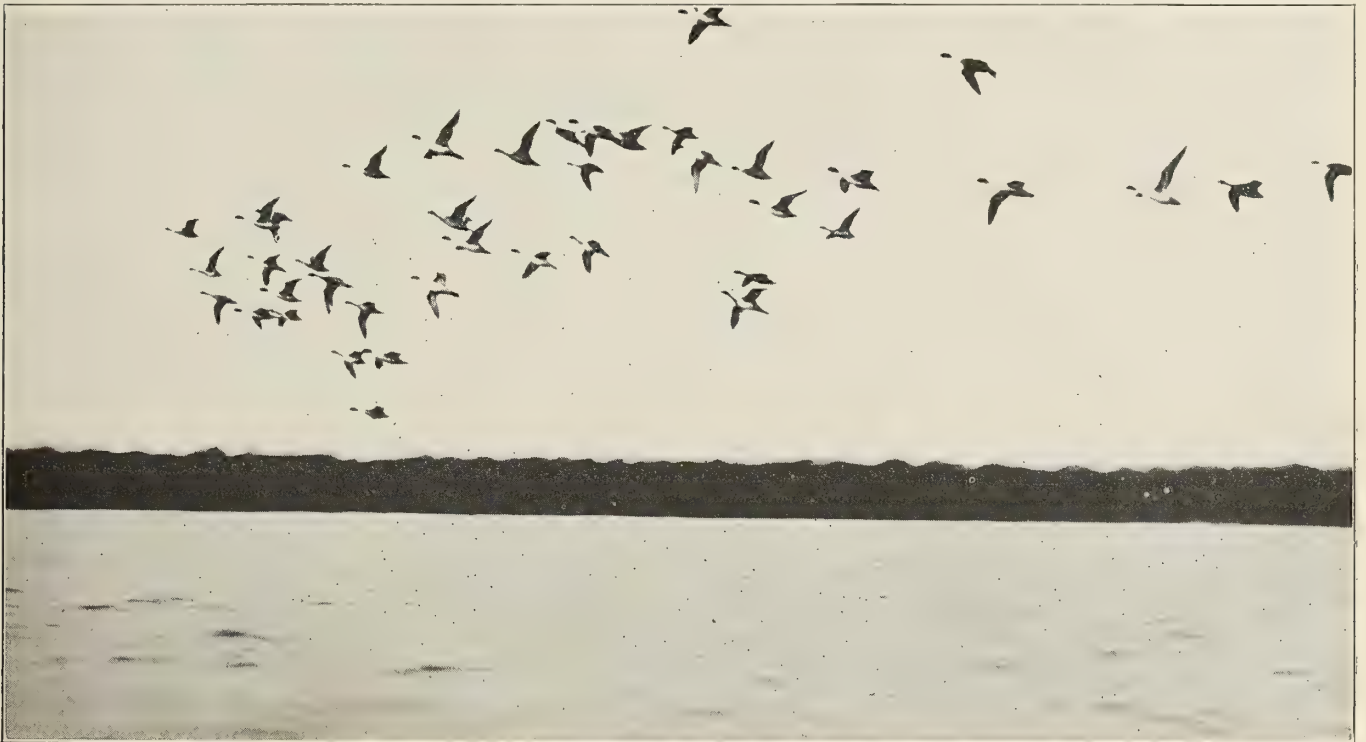
This is the photograph of a Douglas fir root formation which was discovered during the course of clearing the Inglewood Club's golf course in Seattle, says Mr. W. E. Crosby, of Seattle, to whom AMERICAN FORESTRY is indebted for the picture. Contrary to the usual run of root freaks, this one is full of action, resembling some strange animal on a rampage. In life, and with the same lurid decorations, it might well rival the far-famed "Hound of the Baskervilles" in inspiring terror in the human breast.

The Migration of Birds

By A. W. SCHORGER

INTEREST in the arrival and departure of birds dates from ancient times. Wrote the prophet Jeremiah, "Yea, the stork in the heaven knoweth her appointed times; and the turtle and the crane, and the swallow observe the time of their coming." Since that day there have been many earnest students of bird migration. Gaetke has recorded the observations of half a century on Heligoland; English ornithologists have accumulated over long periods a vast amount of data that almost baffles analysis; in America the indefatigable labors of the late W. W. Cooke have added enormously to our knowledge of migration, yet it remains one of the most fascinating and perplexing habits that nature has evolved.

it. In the autumn of 1780 he notices house-martins retiring in the evening toward a thicket covering several acres, and expresses keen regret that the land was not his own; so that he could have grubbed out all the bushes, thus unearthing all the martins of his district. As might be expected, the Reverend Cotton Mather imagined that the wild pigeons which he saw disappear on the approach of winter had set forth on a celestial journey; he believed that they repaired "to some undiscovered Satellite, accompanying the Earth at a near Distance." Many examples of these beliefs could be cited. In a state publication appearing in 1898, the following occurs regarding the now nearly extinct Carolina parakeet: "Prof. John Collett has sup-



(Photograph by H. K. Job, used by courtesy National Association of Audubon Societies)

PINTAILS IN FLIGHT FORMATION. MIGRATING BIRDS DO NOT FLY AT THEIR FASTEST. THEIR MIGRATION SPEED IS USUALLY FROM 30 TO 40 MILES AN HOUR AND RARELY EXCEEDS 50. THE EXACT NUMBER OF MILES WHICH A PARTICULAR BIRD MAKES DURING ONE DAY'S JOURNEY HAS NOT YET BEEN DETERMINED, AND WILL NOT BE ASCERTAINED UNTIL THE TAGGING OR BANDING OF BIRDS BY MEANS OF METAL RINGS IS CARRIED OUT MORE EXTENSIVELY THAN HAS YET BEEN DONE. PINTAILS RANGE THROUGHOUT NORTH AMERICA AND WHEN IN FULL BREEDING PLUMAGE ARE ONE OF OUR MOST BEAUTIFUL BIRDS

Few natural phenomena have been encumbered with such highly imaginative explanations. Fact and fiction seem hopelessly intermingled. Belief in witchcraft ceased with the laity long before educated people refrained from writing of swallows disappearing in the water of a pond to spend the winter in its muddy bottom, or of certain birds spending the coldest months in a state of coma in caves and hollow trees. Linnaeus and even Cuvier fell victims to the popular theory of hibernation, so it is not surprising that the lovable, painstaking naturalist, Gilbert White, also believed in

plied the following note: 'In 1842, Return Richmond of Lodi, Indiana, cut down, in the cold weather of winter, a sycamore tree some four feet in diameter. In its hollow trunk he found hundreds of Parakeets in a quiescent or semi-torpid condition. The weather was too cold for the birds to fly or even to make any exertion to escape.' The fallacy of these statements becomes apparent when we consider that the body temperature of all birds is higher than that of mammals, and in the case of the more active species, fully ten degrees higher than that of man. The fact also



(From a drawing by L. A. Fuertes)

THE ARCTIC TERN (*Sterna paradisæa*), ONE OF THE MOST EXQUISITE OF BIRDS, IS AS WELL THE CHAMPION LONG-DISTANCE MIGRANT OF THE WORLD. IT BREEDS AS FAR NORTH AS IT CAN FIND LAND ON WHICH TO BUILD ITS NEST AND WINTERS AS FAR SOUTH AS THERE IS OPEN WATER TO FURNISH IT FOOD, ITS SUMMER AND WINTER HOMES BEING 11,000 MILES APART, NECESSITATING A YEARLY ROUND TRIP OF 22,000 MILES

that the swallows appeared in spring with a new coat of feathers should at least have been disconcerting. It is a most curious anomaly, however, that we do not yet know where the chimney swift spends five months of the year.

A given locality may have several classes of migrants, but the distinction is one of degree rather than of kind. The catbird and Baltimore oriole come to us in the spring, rear their young, and all depart again in autumn. Most of the ducks and geese are, with us, strictly birds of passage. Our shore birds, too, with a few exceptions, merely break their journey to stay with us for a moment; the beautiful golden plover, for instance, flies on to the Barren Grounds and builds its nest within a few inches of eternal frost. In winter the longspurs and redpolls come sifting down from the north with the snowflakes to winter as far south as the United States. Finally, we have the erratic migrants which are by far the most spectacular. Concerning the arrival and departure of such species as the snowy owl and evening grosbeak, no prediction is safe. Europe has furnished some interesting examples of spasmodic irruptions of certain species taking an erratic course. In the autumn of 1884 large numbers of nutcrackers surged over Central and Western Europe, and in 1882 vast flocks of common jays (*Garrulus glandarius*)

passed over Heligoland; in 1863 Pallas' sand grouse, a bird of Central Asia, appeared in Europe, even reaching England, but this ornithological wonder paled into insignificance in comparison with the prodigy of 1888, when vast multitudes of the same bird swept over Europe again. This invasion, unlike that of the Mongolian "bipeds without feathers" from the same locality during the thirteenth century, filled the larder rather than emptied it.

The initial causes of migration are obscure and probably will always remain so. The theory has been propounded that in the far-distant past, the mere possession of the power of flight induced in birds the habit of migration. Obviously, it would be difficult to migrate otherwise; but the penguins accomplish the journey mainly with their feet. The desire to nest in a secluded spot, as a cause for migration, can be applied to only a limited number of species. The view also



(Courtesy of the Biological Survey)

THIS MAP SHOWS THE DISTRIBUTION AND MIGRATION OF THE GOLDEN PLOVER (*Charadrius dominicus*). IN FALL IT FLIES OVER THE OCEAN, FROM NOVA SCOTIA TO SOUTH AMERICA, 2,400 MILES—THE LONGEST KNOWN SINGLE FLIGHT OF ANY BIRD. IN SPRING IT RETURNS BY WAY OF THE MISSISSIPPI VALLEY, DESCRIBING AN ELLIPTICAL MIGRATION ROUTE, FOLLOWING REGULARLY DIFFERENT PATHS FOR THE SPRING AND FALL MIGRATIONS

has been advanced that the sojourners in Central and South America are roused to emulation at the sight of the nesting of indigenous birds and hasten northward to seek a similar felicity. The most reasonable explanation of migration is based on the problem of food supply. The habit was doubtless formed during the Glacial Period, the birds learning by force of necessity to follow the ebb and flow of the great ice-sheets in search of food and nesting sites.

The manner in which birds find their way permits us to assume with a certain degree of safety that they possess what is tantamount to a sixth sense, that of

food. Though a dense fog limited vision to a few hundred yards, the murre, at first flying parallel with the vessel, disappeared in the mists, headed toward their destination with the accuracy of a compass.

According to an old and well established belief, the smaller birds having only moderate powers of flight migrated by night to escape their enemies and to secure food and rest by day. Without doubt most of the warblers, sparrows, flycatchers and shore birds begin their journey at dusk and end it just before dawn. The hawks, swallows and chimney swift migrate by day, while the ducks and geese migrate either by day or



(Photograph by H. K. Job, used by courtesy National Association of Audubon Societies)

MALLARDS AND PINTAILS AT THE BREEDING GROUNDS. SOME BIRDS MIGRATE BY DAY, BUT MOST OF THEM SEEK THE COVER OF DARKNESS. DAY MIGRANTS INCLUDE DUCKS AND GESE, THOUGH THEY ALSO MIGRATE AT NIGHT. THE MALLARD BUILDS ON THE GROUND, MAKING ITS NEST OF ANYTHING SUITABLE AT HAND, FINISHING IT OFF WITH FEATHERS. WILD MALLARD OCCUR NEARLY ALL OVER NORTH AMERICA

direction. This sense, by virtue of which birds wintering in Chile return unerringly to the vicinity of their old breeding grounds in the northern hemisphere, is little short of marvelous. Coast lines, mountain ranges, and the larger rivers may direct the way, since from their coign of vantage in the air, the topography of the country must be plainly visible for several miles; but vision alone can scarcely suffice. The tiny hummingbird, with its wings executing several hundred strokes a minute, does not hesitate to dash forward on a continuous flight of five hundred miles across the Gulf of Mexico. To the Pacific plover, leaving Alaska for the Hawaiian Islands, over 2000 miles of watery waste, sight can be of little assistance. Cooke relates that during the Harriman Alaskan expedition the members went by steamer from the island of Unalaska to Bogoslof Island, a distance of about 60 miles. Midway between the two islands flocks of murre were encountered returning to Bogoslof after long quests for

night. Telescopic observations have shown great numbers of birds flying across the face of the moon, and on favorable evenings the notes of countless birds may be heard from overhead. Paradoxical as it may seem, night favors the study of migration. The numbers of birds killed by lighthouses, bird calls out of the night, and lunar observations have furnished such a mass of evidence in favor of nocturnal migration that we are prone to neglect the fact that many of these same birds can and do migrate by day. Flocks of the Pacific plover have been seen by capable observers on the Hawaiian Islands to rise into the air, circle round and round until nearly lost to view, and then strike northward. On the plains of South America Prof. Barrows has made records of flocks of golden plover passing in rapid succession for many hours at a time. In the West Indies thousands of warblers have been noted migrating by day, in one case the migration extending over a period of three days. Incidentally, in

this connection, it is interesting to mention that warblers encountered midway between Florida and the Bahamas were flying at a height not exceeding ten feet above the water, showing the impossibility of vision being an important factor in determining direction.

Birds arrive according to the calendar within fairly definite limits, and in all countries their appearance has attained a certain pastoral significance. Among the early Greeks the coming of the crane indicated the time of sowing, and Virgil assures us that the best time for planting vineyards is when the stork appears. Barton stated in 1799 that it was then an old observation in Pennsylvania that when the whip-poorwill arrives it is time to go bare-footed.

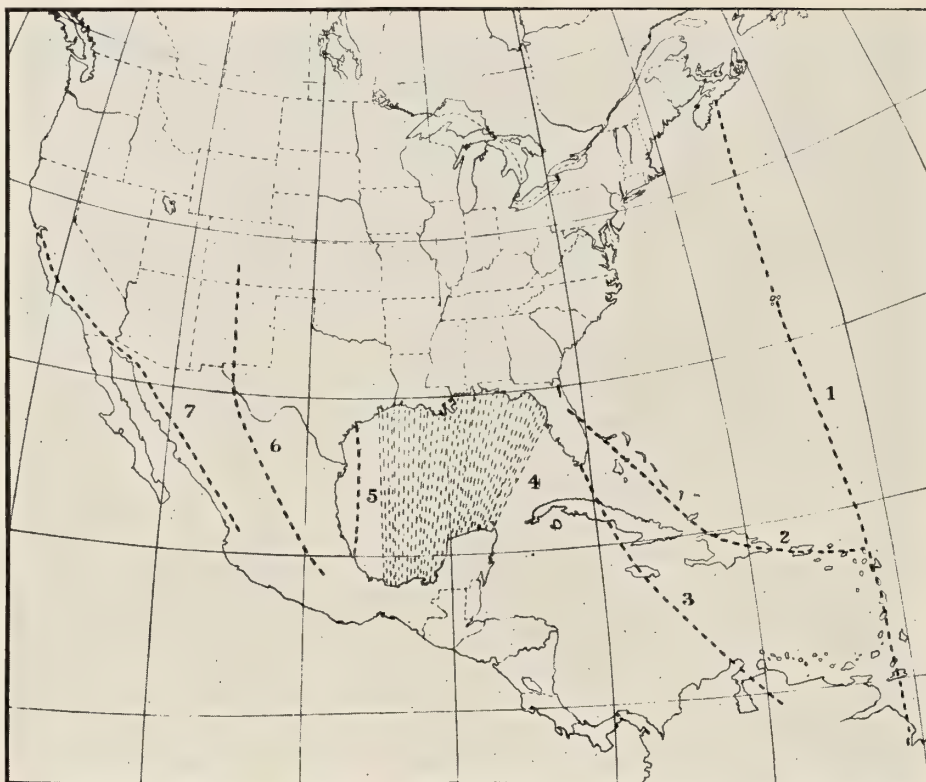
Records extending over many years in England failed to show any correlation between migration and the weather. In general, warm days followed by clear nights with favorable winds are considered most propitious, but these conditions are not necessarily awaited. The spring records

kept for many years by Florida lighthouses show that birds arrive from Cuba as frequently with the wind against them as when it is favorable. The instinctive impulse to migrate appears to be the predominating factor, and arrivals and departures are affected more by a change in climatic conditions than by the degree of change. The degree of heat and cold is of importance only as it affects the food supply. Ducks harry retreating winter, taking immediate possession of the first reaches of open water, and the "kong-quer-ree" of the redwing is heard in the marshes long before all the snow has disap-

peared. The great majority of species do not migrate until the season is so far advanced that the forward journey can be undertaken with comparative safety. The less hardy birds, such as the flycatchers and warblers, are temporarily checked by adverse weather conditions, the numbers in a given locality increasing steadily until at the first favorable moment they push forward again as a migration wave.

On the night of October 19, 1880, while looking through the telescope of the astronomical observatory at Princeton, Mr. W. E. D. Scott discovered that

numerous small birds were passing across the face of the moon, among which were recognized warblers, black-birds, finches, and woodpeckers. Their height above the earth was estimated at one to two miles. Subsequently various observers using similar instruments against the moon recorded birds migrating at heights varying from 600 feet to 15,100 feet. Birds may fly at high altitudes to take advantage of favorable wind currents as well as to command a greater field of



(Courtesy Biological Survey)

THESE ARE THE PRINCIPAL MIGRATION ROUTES OF NORTH AMERICA. MOST MIGRANTS USE ROUTE NO. 4, THOUGH THIS NECESSITATES A FLIGHT OF 500 TO 700 MILES ACROSS THE GULF OF MEXICO. A FEW TRAVERSE THE MORE DIRECT ROUTE, NO. 3, AND STILL FEWER ROUTE NO. 2. ONLY WATER BIRDS MAKE THE 2,400-MILE FLIGHT ALONG ROUTE NO. 1, ALL THE WAY FROM NOVA SCOTIA TO SOUTH AMERICA

vision. At a height of about three miles the density of the air is only about one-half that at sea-level and for this reason the argument has been advanced that birds can fly more easily at great heights on account of the decreased resistance of the air; but it is equally true that the buoyancy of the air is correspondingly decreased. The height maintained during flight is a question still insoluble from lack of satisfactory data, and it is doubtful if accurate information on this phase of nocturnal migration will be obtained without the use of nets supported by

[Continued on page 186]

(EDITOR'S NOTE.—In this article, written by Mr. Schorger for AMERICAN FORESTRY in February, 1921, he is supported by the findings of von Lucanus, as given in the *Literary Digest* of August 19, 1922, as follows: "It was formerly supposed that migrating birds commonly traveled at very high altitudes, but this is a mistake, according to the results of nearly twenty years of observation with balloons, by Lucanus. He finds that nearly all migrating birds travel at less than 3,000 feet, and that it is exceedingly uncommon for birds to be found above that altitude.")

Wild Life and Wildfire

[Continued from page 144]

ship at sea, or a railroad engineer in charge of an electric-lighting plant.

Before success comes to us, politics must go. The people of every state must make their governors and their legislatures see that conservation of forests and wild life is not for the hunter and fisherman alone. Trained men, skilled and intelligent in their professions, must replace those who are utterly unable to cope with the tragedy as it exists today. Ten years from now, five years from now, will be too late. And only *the people* can save us from an utter devastation. Only *the people*, with their power of the ballot, can put their lakes, their streams, and what wild life and forests they have left, into hands capable of caring for them, perpetuating them, and increasing them.

People must come to an understanding of what conservation means. They must be made to realize that human life is absolutely dependent upon wild life and forests. Without these things we would become extinct as a race. If all vegetation, all wild life, and all forests should disappear tomorrow, the human race would become extinct upon the face of the earth within one year. Without wood we would have no agriculture, no manufacture, no commerce. Civilization, as we know it, would come to an end. In the United States today three billion dollars are invested in manufacturing plants where the raw material is wood. *Fourteen million people*, or one-eighth of the total population of the country, are dependent upon these wood-working plants for their livelihoods. Yet within the last five years seven thousand sawmills have been junked in this country because of lack of material.

The hour for action is not ahead of us. *It is here.* Tomorrow will be too late. If every governor in every state realized this today, there would be a wholesale resignation of incompetents throughout the land and their replacement by men who are technically and professionally fitted. Conservation and propagation is a science. It is a life-and-death problem confronting a hundred and twenty million people in the United States. It is not a trivial affair, to be juggled in the hands of politicians or to be guided happen-chance by lucky appointees chosen from any and every walk of life. It is a problem for broad and intelligent minds technically and professionally prepared for the gigantic work in hand—the very men who are now held back, kept out, and seldom employed. And there seems to me to be but one inference. Such men, the very biggest that can be secured for the work, will not prostitute their ability, their training, and their profession by seeking political influence. They cannot swing counties or sections of states. Such men are employed in our colleges and our universities. Upon them we depend for the education of our children and the advancement of science. They have forgotten more about *real* conservation than the conservation departments of all our states will ever know. Yet governors seldom appoint them, legislatures rarely employ them. *Why?*

A Cascara Tree in West Virginia

By HU MAXWELL

Recently while traveling through the country in West Virginia, I noticed a peculiar tree standing near a fence. I did not think it was a native tree of the State, so I called at the house near-by and was given permission to examine it more closely.

I was struck by the tree's similarity of appearance to the cascara tree of the Pacific coast, and I was told that the present tree came from seeds which a young man had carried from the State of Washington a few years ago, when he returned from there.

That explained how the tree came to be there. It was undoubtedly the cascara tree, and I think it was the *cascara sagrada*, from which the medicine called cascurets is made.



THE VISITOR FROM THE FAR WEST

A Cascara Sagrada tree growing from seed brought from the state of Washington and planted by a new fence in West Virginia.

I was interested to find that the valuable medicinal tree of the far western mountains seems perfectly at home in the climate of West Virginia. It is standing at an altitude about 1,690 feet above sea-level. It is associated with the yellow poplar, chestnut, beech, birch, oak, and hemlock.

I never saw a cascara tree in better health, or one putting on more vigorous growth among the Sierra Nevada mountains in California, or in the damp climate of Washington. The tree as it is growing in West Virginia is of a little deeper green than it is in the West, for there it is often of a yellowish cast, particularly in the fall.

Broadcast from the Southern Forestry Congress

Nineteen States were represented at the Fifth Southern Forestry Congress, held in Montgomery, Alabama, January 29, 30, and 31. Of the sixteen Southern States within the field of the organization, all but two sent official delegates, while among the visitors were men and women from Michigan, Minnesota, Idaho, and California.

* * *

Pointing to the high cost of building materials, C. B. Harmon, of the Southern Sash, Door and Millwork Manufacturers' Association, asserted in an address on "Forestry and Homes" that at least 50 per cent of the advance in the price of homes in recent years is directly traceable to the approaching timber shortage. In his opinion, a home will be beyond the reach of the average man in another decade, unless our wasteful methods in forest utilization are stopped.

* * *

Peter A. Simpkin, familiarly known as "Parson" Simpkin of Hoo-Hoo, told the congress of the purpose of Hoo-Hoo to place in the field this year one thousand spokesmen for forestry, and to supplement this work by arranging for the free distribution of a million trees to be planted by children in the observance of Arbor Day.

* * *

There are one hundred million acres of cut-over pine lands in the South, an area greater than the combined areas of Alabama, Georgia, and Mississippi, according to S. W. Greene, of the Coastal Plain Agricultural Experiment Station. It is his opinion that no great portion of this area can be farmed, because cultivation conditions are generally adverse. It is Mr. Greene's idea that as soon as the cattleman recognizes that fire is his enemy and not his friend, the troubles between the lumbermen and the cattlemen will clear rapidly away. He voiced the belief that judicious grazing, unaccompanied by woods burning, will encourage reproduction through reduction of fire hazard.

* * *

At present rates, the entire forest area of the Appalachian region is burned over once in 36 years, was a statement made by E. F. McCarthy, of the Appalachian Forest Experiment Station, Asheville. This is too short a period for the hardwoods to reach a size resistant to fire, so that even if 50 per cent of the area is considered as reburned the percentage of fire damaged timber still represents an enormous public loss. The deceptive green crown cover of the Southern Appalachians often hides a condition where successive fires have killed the smaller trees and produced a diseased and crippled old stand.

According to Henry Hardtner, President of the Urania Lumber Company, the cost of growing pine on his land where seed trees were left amounted to \$100 per acre at the end of a 20-year period. At the end of 40 years this cost is reduced to \$90 an acre, as a result of wood sales from thinnings. On the basis of \$15,000 an acre, this means a cost of \$6.00 a thousand feet, and it is estimated that the stumpage at the end of the 40-year period will be worth at least \$10.00 a thousand feet. This would leave a net profit of \$60.00 an acre, or \$1.50 an acre a year. Mr. Hardtner's computations were based on 8 per cent compound interest all the way through the operation.

* * *

Austin Cary, of the Forest Service, could not resist the temptation to comment on Mr. Hardtner's cost figures and made it a point to impress upon the gathering the net profit of \$1.50 an acre a year, plus 8 per cent interest all the way through. He wondered if Mr. Hardtner couldn't get along with a little less return than this and still figure that his venture in practical forestry was a paying one.

* * *

Forty-five out of one hundred counties in Virginia, according to A. D. Hastings, Assistant State Forester, have voluntarily appropriated county funds to provide forest fire protective organizations. While voluntary cooperation in the State has been very helpful, the uncertainty of the system has proven a tremendous drawback, and a State law is advocated requiring all counties to cooperate on some reasonable basis.

* * *

The old viewpoint expressed in the phrase "Can we afford to reforest?" has passed, giving way to the new phrase "Can we afford *not* to reforest?" declared J. K. Johnson, forester of the Great Southern Lumber Company of Bogalusa. This company is not only protecting its lands from fire and razor-backs, but it is experimenting with the raising of different pines. The company believes that 200,000 acres of southern pine land can be made to produce 20,000 feet an acre annually on a forty-year rotation and keep busy ten hours a day the largest sawmill in the South.

* * *

"We may use, but never waste or destroy, our forests. We should improve as well as use them." These words, by Mrs. G. M. Winters, of the D. A. R., might well be said to be the slogan of the congress.

Pioneer Lumberman and Conservationist Dies

In the passing of Capt. J. B. White, of Kansas City, on January 5, the conservation forces of the United States lost a powerful ally and active friend. A pioneer and for many years a dominating figure in the lumber industry, he clearly visualized the need for perpetuating our national forest resources to insure an adequate supply of forest



CAPT. J. B. WHITE

products, and advocated reforestation to save the country from the bad effects of unlimited clearing of timber from the great watersheds of the country.

Active in organizations to promote the development of the lumber industry, Captain White was conspicuously successful. He organized scattered lumber mills to convert timber to lumber, and then organized conservation associations for reforestation, being the author of several treatises on forestry. Under the Folk and Hadley administrations he was a member of the Missouri Forestry Commission and was in close accord with President Roosevelt in his conservation policies. He was President of the National Conservation Congress in 1911.

To many Captain White was known more as a student, philosopher, and citizen than as a man of "big business." His philosophy was based on the certainty of the good in human nature and the reward of endeavor.

Captain White served for many years as a Director of

the American Forestry Association, of which he was a life member, and later as one of its Vice-Presidents, during which time he gave without reserve his time and best efforts in the development of the work of the Association for the furtherance of forestry. The influence of his striking personality, lovable and genial characteristics, and wise counsel will live long in the memory of his friends.

An article in *The Timberman* says: "Forest fires are not a serious menace in India. One reason for this fact is that carrying fire, either in the form of lighted tobacco or otherwise, is prohibited by law during February to June, the dry season." Is this not food for thought?

Mother Nature

By ORVILLE LEONARD

FOR countless years the bones of pioneers have whitened the snowy wilderness and sun-scorched desert waste, but ever in the end men fathom Nature's moods and by so doing bend her will to meet their needs. At times she is harsh, uncompromising, as though to reprimand man's foolish waste, saying:

"You cut down all the forests that I gave you, banishing their beauty and their shade, and so where rich, deep land was moistened, guarded, I have grown brush to clothe that nakedness. Now burn and dig ere you shall gain my riches."

There is a land I know where sixty years ago the giant pines made noble pillars bearing up a roof of thickest green, where grass was plentiful and rich, where cattle thrived and fattened, where the ranchman's plow bit deep in generous mold, and where Mother Nature's finger, all smeared with virgin gold, was thrust up through the surface for human eye to see. Today the forests are all gone, save here and there a pine. The tarweed and the filaree have crowded out the grass, while, in place of mighty pines, the chamisal and chaparral have hidden all the gold. And Mother Nature says:

"See what you have done!

"You have burned up my wooden umbrella, so now you must scorch in the sun.

"You are a clever child, however, and I have other means to help you live—but you must hunt for them."

Then she adds seriously:

"But when you have grown so strong in spirit that selfishness and waste are put aside, so high in thought and living that your clear eye pierces the heart of all, even the deeply-hidden heart of me, then will I fight you never, then will you be a man."

Tiny grass, your steps are small, but you possess the earth under your tread.—Tagore.

Bird Migration

[Continued from page 176]

stationary balloons. It is highly probable that the greater numbers of birds migrate at distances less than three thousand feet from the earth.

Birds, like autumn leaves, frequently become the sport of the winds. Migration routes crossing large bodies of water like the Gulf of Mexico and the Great Lakes may cause disaster. Though the migrants set out under favorable conditions, they may be forced by storms which arise suddenly to exhaust their strength in a futile struggle against the elements.

In September, 1879, a violent storm strewed the eastern shore of Lake Michigan with dead birds. It was estimated by an observer, from the count of the numbers on a certain portion of the shore-line, that if the same figures held for the entire shore a half million birds must have perished. On the night of March 13, 1904, a large flight of Lapland longspurs was overtaken during a northward journey in Minnesota by a heavy, damp snow. The dead, covering the surface of two small lakes, were estimated at 750,000. Again, a snow storm on Lake Huron on the night of October 10, 1906, caused the death of 5,000 birds to the mile of shore-line.

The structures raised by man also kill their thousands. On a spring morning in the year 1902 nearly one hundred and fifty dead birds were picked up around the Washington Monument; but this destructiveness is greatly exceeded by that of the numerous lighthouses on our coasts, particularly those having a steady white light. While the torch in the Statue of Liberty was kept lighted, as many as seven hundred birds were killed in a single month. The Fire Island Light on Long Island claimed 595 victims in one night.

A few of our birds blown out to sea cross it in safety. Amazing as it may seem, considering their moderate powers of flight, the catbird, brown thrasher, and black-billed cuckoo have been found in Europe, the latter as far south as Italy. The American bittern, so ungainly and slow of wing, would find few if any "backers" for a transatlantic flight, yet this species was first made known to science from a specimen taken in England over a century ago.

The rate of speed that certain birds, such as the ducks and swallows, attain during flight is popularly supposed to exceed one hundred miles an hour. The velocity of 107 miles per hour credited to swallows during an experimental flight in France requires verification. Gaetke believed the gray crows to migrate from Heligoland to Lincolnshire at the astonishing rate of 120 miles an hour, and that the curlews and plover covered the distance from Heligoland to the oyster beds four miles eastward in one minute or at the rate of about 240 miles an hour. Experiments conducted

in a closed gallery in England showed that pigeons flew but 32.8 miles an hour and the partridge reached a speed of only 28.4 miles. During short flights of about 100 miles the greatest speed recorded for the homing pigeons is 80 miles an hour, while the average racing speed is only about 35 miles.

One of the longest recorded flights of a carrier pigeon is from Pensacola, Florida, to Fall River, Massachusetts, a distance of 1,183 miles. The time required was fifteen and one-half days, so that the distance covered daily was only about 76 miles. Migrating birds travel in a much more leisurely fashion. A rest of a few days is followed by a short dash onward, and more time is consumed at the beginning of the journey than at the end. In fact, the forward movement is surprisingly slow. The purple martin takes about 90 days to travel from New Orleans to Oak Point, Manitoba, a distance of 1,440 miles, proceeding at an average speed of 16 miles per day. Various considerations lead to the belief that but twelve days were actually consumed in flight, making a daily average of 120 miles. The average speed of all birds from New Orleans to Minnesota is only 23 miles a day. The robin, cowbird, and flicker are content with making 12 miles a day, while 28 miles appear to be a satisfactory day's work for the ruby-throated hummingbird and nighthawk.

The grey-cheeked thrush takes about fifteen days to travel from southern Louisiana to northern Iowa, the thousand miles being covered at the rate of about 60 miles per day. Two weeks more are consumed in reaching its summer home in northwestern Alaska, so that we are forced to assume a much greater speed during the last stages of the journey of 3,000 miles. The blackpoll warbler behaves similarly, making about 35 miles per day as far as Minnesota and then 200 miles daily in reaching Alaska.

The distances traveled by various species of birds between their summer and winter homes present many anomalies. The labored flight of the rails is so proverbial that it was formerly supposed that they migrated on foot. The Carolina rail, however, crosses the wide reaches of the Caribbean to winter in South America. The robin, a much better flyer, migrates with reluctance, a few wintering even in southern Wisconsin. The range of the nighthawk is from Alaska to Argentina, a distance of 7,000 miles, exceeding that of any other land-bird.

Some of the water-birds travel distances truly marvelous. The golden plover, breeding on the Barrén Grounds, migrates overland to Nova Scotia. From this point to South America, a distance of 2,400 miles, the journey is made entirely over the waters of the Atlantic and Caribbean. It is even assumed that this enormous distance is usually covered in a single flight, a feat almost surpassing credulity. After wintering in Argentina, this species, to be thoroughly

capricious, returns to its breeding grounds within the Arctic circle by way of Central America and the Mississippi Valley.

The Pacific plover on leaving Alaska has a landless course of 2,000 miles before reaching its winter home in the Hawaiian Islands. Skeptical as we may be of the accomplishment of this journey in a single flight, the fact remains that there are very few authentic instances of a plover having been noted to seek a temporary rest upon the water, while there are numerous records of this species having been encountered on the sea in a state of great fatigue as shown by their labored flight.

The Arctic tern in its annual migrations makes a journey practically equivalent to circumnavigation of the globe. It breeds to within eight degrees of the North Pole, and the Antarctic summer finds it in the Weddell Sea, an extreme range of 11,000 miles. In spite of the abundance of this species, the exact route followed during the inter-polar journey remains unknown.

The apparent consistency with which birds return to the same nesting sites has a strong imaginative appeal. The martins are believed to return to the same house and the bluebirds to the same orchard. The comparatively recent activity in bird-banding has shown extraordinary possibilities of enlightening us on this point as well as on many other phases of migration. During 1917 all the wrens, both old and young, amounting to twenty-three in number, occurring on a farm at Cleveland, Ohio, were banded. The following year there were nine adult wrens on the place and only one of them had the band of 1917. Where the new arrivals spent the preceding season, as well as the fate of the twenty-two previous residents, is left to speculation.

The particular migratory quail inhabiting England takes a southeastern direction during migration. Several attempts have been made to introduce this species into New England, where they bred and finally disappeared. The explanation has been given that the inherited tendency to migrate in a southeasterly direction carried them out to sea where they were lost. In this case, as well as in that of most species carried out to sea in stormy weather, are we to assume the disaster came from the possession of an inherited sense of mere direction without proper orientation? The chimney swifts leave our shores in thousands to winter in parts unknown. The golden plover migrates vast distances over the ocean, but does it actually cover 2,000 miles and more in a single flight? Thousands of Arctic terns migrate annually from pole to pole, yet the route followed is at best a guess. Our lack of knowledge on many of the specific phases and general principles of migration is still so great that we must agree with Alfred Newton, who said: "We are here brought face to face with the greatest mystery which the whole animal kingdom presents."

Suggestions for Planting Trees for Shade and Beauty

With the signing of the Armistice the American Forestry Association proposed the "memorial tree" idea and it met with instant approval. Since then thousands of trees have been planted by individuals, schools, colleges, churches, and patriotic organizations.

Another phase of this work is the "Road of Remembrance"—also originated and developed by the American Forestry Association. This is roadside tree planting, and it has been enthusiastically taken up by women's clubs, automobile clubs, and highway, civic, and other associations.

The value of planting trees is so apparent to our Federal and State governments that there are planted on our public lands each year millions of tree seedlings and transplants. No less important and valuable is tree planting by the individual—BUT it is not enough to plant trees. They must be properly planted, cared for, and protected so that the richness of their maturity may carry its own lesson, and man may so come to realize the real "service of the trees."

WHAT TREES TO PLANT

As providing shelter and shade is one of the important values of tree planting, the selection of the kind of trees to plant is most important. A spruce will be less successful for shade production than an elm, but the spruce is admirable for shelter. It is more desirable to plant the slow-growing oak and sycamore than to select quick-growing trees such as silver maple and many of the poplars, which also mature and die earlier. Selection should also be influenced by cultural requirements.

SELECTED LIST OF TREES

For New England States, New York, Pennsylvania, New Jersey, Ohio, West Virginia, Kentucky, Indiana, Michigan, Illinois, Missouri, and Iowa:

DECIDUOUS TREES

Sugar maple	White ash	Pin oak
Norway maple	American white elm	American linden
Scarlet maple	Red oak	Scarlet oak
Green ash	White oak	

EVERGREEN TREES

White spruce	White pine	Hemlock
Colorado blue spruce	Scotch pine	Arbor vitae
	Balsam pine	

For Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Tennessee, Florida, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, and Texas:

Tulip	Norway maple	Willow oak
Sycamore	Scarlet maple	White pine
Pin oak	Red elm	Longleaf pine
Scarlet oak	American white elm	Magnolia
White oak	Kentucky coffee tree	Live oak
Black oak	American linden	Cedar of Lebanon
Red oak	Red gum	American holly
White ash	Black gum	
Bald cypress	Hackberry	

For Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Colorado, Wyoming, Montana, and Idaho:

Bur oak	Hackberry	White pine
Linden	Honey locust	Norway spruce
Norway maple	Black locust	Colorado blue spruce
Green ash	<i>Less desirable:</i>	White spruce
Wild cherry	Cottonwood	Red cedar
Larch	Box elder	Arbor vitae
American elm	Scotch pine	
Black walnut	Austrian pine	

For New Mexico, Arizona, Utah, and Nevada:

Hackberry	Bur oak	Arbor vitae
Honey locust	Valley cottonwood	Deodar cedar
Green ash	Mountain cottonwood	Box
American elm	Mountain ash	Euonymus
Black locust	Box elder	

For California, Oregon, and Washington:

DECIDUOUS TREES

COAST REGION

Large leaved maple	European linden	Weeping willow
	Sycamore	

COLUMBIAN BASIN

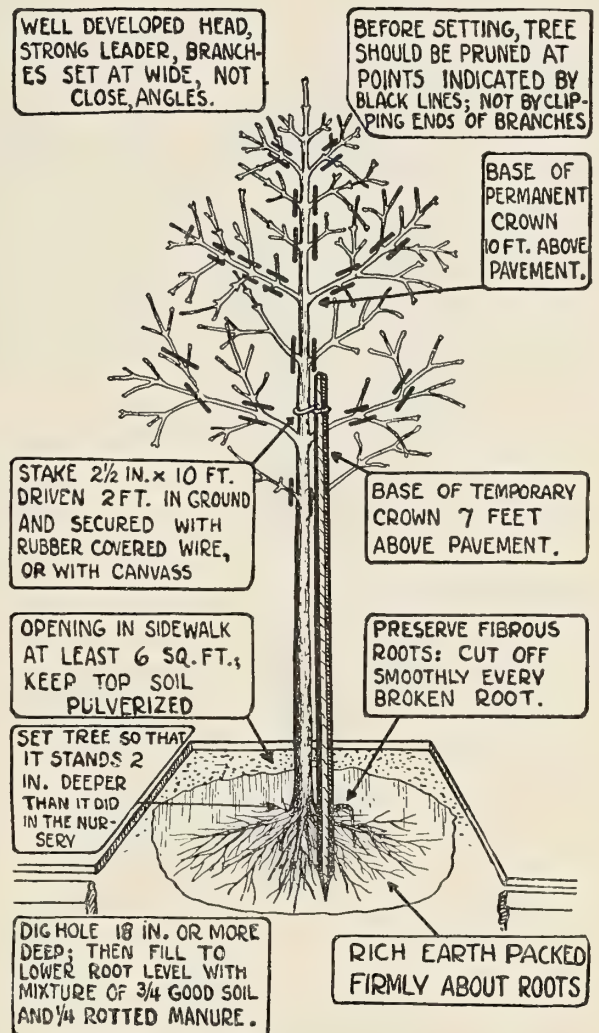
Norway maple	Sycamore	Russian poplar
European linden	Green ash	White willow
	Silver poplar	

EVERGREENS

Deodar cedar	Monterey cypress	Lawson cypress
Monterey pine		Bigtree

PLANTING TREES

The two normal seasons for planting broad-leaved trees are spring and fall. There are advocates for both seasons, but it is safe to say that all trees except the evergreens may be planted at any time during the dormant period when it is possible to work the soil—that is, when it is not frozen. This period begins with the dropping of the foliage in the autumn and ends when the buds burst open in the spring. Evergreens are usually planted most successfully in late spring and during the latter part of August and September. The necessary pruning and proper placement of trees in planting is indicated by the following cut.



OBSERVE THESE INSTRUCTIONS IN PLANTING

People are just awakening to the possibilities of tree planting, and to a knowledge that tree planting is not a thing of this year or of the next. Let us plant for shade, for scenic value, to beautify streets or lawns, for parks, and for communal woodlands. All tree planting serves a purpose, provided the planting is properly done and the trees live.

ARBOR DAY

The celebration of Arbor Day originated at Lincoln, Nebraska, on January 4, 1872, when, at a meeting of the State Board of Agriculture, the Hon. J. Sterling Morton, of Nebraska city, introduced a resolution "That Wednesday, the 10th day of April, 1872, be . . . especially set apart and consecrated for tree planting in the State of Nebraska." The resolution was adopted, wide publicity was given to the plan, and over a million trees were planted in Nebraska on that first Arbor Day.

Since then we have had fifty years of such tree planting, for Arbor Day celebrated in 1922 its semi-centennial.

The time of the observance of Arbor Day varies in different States, mainly because of climatic conditions. The dates announced for the spring of 1923 are as follows:

Alabama, February 22.	Sterling Morton, father of Arbor Day.
Arizona, April 6.	Nevada, by the Governor.
Arkansas, March 3.	New Hampshire, by the Governor.
California, March 7.	New Jersey, April 13.
Colorado, April 20.	New Mexico, March 9.
Connecticut, in May, by Governor.	New York, May 4.
Delaware, in April, by Governor.	North Dakota, by the Governor.
Idaho, in April, by county superintendents.	Ohio, by the Governor.
Illinois, by the Governor.	Oklahoma, March 16.
Indiana, April 20.	Oregon, April 13.
Iowa, by the Governor.	Pennsylvania, by the Governor.
Kansas, by the Governor.	Rhode Island, May 11.
Maine, by the Governor.	South Dakota, in April, by the Governor.
Maryland, April 13.	Texas, February 22.
Massachusetts, April 28.	Utah, April 15.
Michigan, April 27.	Vermont, May 4.
Minnesota, late April, by Governor.	Virginia, by the Governor.
Missouri, April 6.	West Virginia, April 13.
Montana, May 1.	Wisconsin, Washington, and Wyoming, May 4.
Nebraska, April 22, birthday of J.	

Interest in tree planting may often be stimulated by accompanying it with appropriate ceremonies, particularly where the planting is done by schools, clubs, and other forms of public-spirited or private organizations. The character of the ceremony depends upon the character of the planting. If single trees or groups of trees are planted the program given below will be of service. If roadside planting is done by a community or an organization a public meeting to inaugurate the work may be held and a program of appropriate addresses made.

TREE PLANTING PROGRAM

THE PLANTING SONG

Tune: America

God save these trees we plant,
And to all nature grant
Sunshine and rain.
Let not their branches fade,
Save them from ax and spade,
Save them for joy and shade—
Guarding the plain.

When they are ripe to fall,
Neighbored by trees as tall,
Shape them for good.
Shape them to bench and stool,
Shape them to square and rule,
Shape them for home and school,
God bless the wood.

Lord of the earth and sea,
Prosper our planted trees,
Save with Thy might.
Save us from indolence,
Waste and improvidence,
And in Thy excellence,
Lead us aright.

Address—Upon Occasion for the Planting

RECITATION—"TREES"

Poem by Joyce Kilmer, Who Gave His Life in France

I think that I shall never see
A poem lovely as a tree.

A tree that looks at God all day
And lifts her leafy arms to pray.

Upon whose bosom snow has lain;
Who intimately lives with rain.

A tree whose hungry mouth is prest
Against the earth's sweet flowing breast.

A tree that may in summer wear
A nest of robins in her hair.

Poems are made by fools like me,
But only God can make a tree.

Planting of the Tree or Trees

WHAT THE TREES TEACH US

(Fourteen Rhymes for Individual Recitations)

I am taught by the Oak to be rugged and strong
In defense of the right, in defiance of wrong.

The Birch, in its wrappings of silvery gray,
Shows that beauty needs not to make gorgeous display.

The Lombardy Poplars point upward in praise,
My voice to kind Heaven they teach me to raise.

I have learned from the Maple, that beauty to win
The love of all hearts, must have sweetness within.

The Ash, having fibers tenacious and strong,
Teaches me firm resistance, to battle with wrong.

I am taught generosity, boundless and free,
By showers of fruit from the dear Apple tree.

The Beech, with its branches wide-spreading and low,
Awakes in my heart hospitality's glow.

The Aspen tells me with its quivering leaves,
To be gentle to every sad creature that grieves.

The Cherry tree blushing with fruit crimson red,
Tells of God's free abundance that all may be fed.

The Pine tells of constancy. In its sweet voice,
It whispers of hope till sad mortals rejoice.

The Elm teaches me to be pliant yet true;
Though bowed by rude winds, it still rises anew.

In the beautiful Linden, so fair to the sight,
This truth I discern: It is inwardly white.

The nut-bearing trees teach that 'neath manners
gruff
May be found as "sweet kernels" as in their caskets
rough.

The firm-rooted Cedars, like sentries of old,
Show that virtues deep-rooted may also be gold.

—Helen O. Hoyt.

Address—Dedication of the Tree or Trees

TREE PLANTING SONG

Tune: America

Joy for the sturdy trees,
Fanned by each fragrant breeze,
Lovely they stand!
The song birds o'er them trill,
They shade each tinkling rill,
They crown each swelling hill,
Lowly or grand.

Plant them by stream and way,
Plant where the children play
And toilers rest;
In every verdant vale,
On every sunny swale—
Whether to grow or fail,
God knows best.

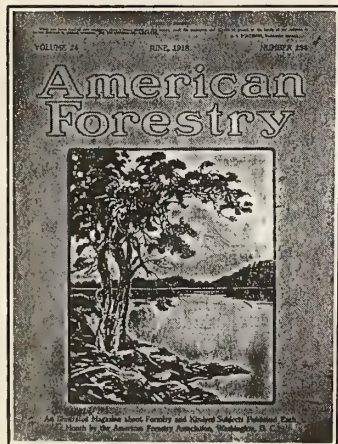
Select the strong, the fair,
Plant them with earnest care,
No toil is vain.
Plant in a fitter place,
Where, like a lovely face,
Let in some sweeter grace,
Change may prove gain.

God will His blessing send,
All things on Him depend,
His loving care
Clings to each leaf and flower
Like ivy to its tower.
His presence and His power
Are everywhere.

—S. F. Smith.

Every tree lover should receive the beautifully illustrated monthly magazine American Forestry. Write to the Office, 914 Fourteenth Street, Washington, D. C., for a sample copy.

PLANT TREES
PROTECT FORESTS
USE FORESTS



This is the only Popular National
Magazine devoted to trees and
forests and the use of wood.

March, 1923.

BECOME A MEMBER—SECURE SUBSCRIPTIONS FROM YOUR FRIENDS

Any person may become a member of The American Forestry Association upon application and payment of dues.

FILL OUT THIS BLANK:—

THE AMERICAN FORESTRY ASSOCIATION

914 FOURTEENTH STREET N. W., WASHINGTON, D. C.

I hereby request membership in The American Forestry Association and enclose \$.....

INDICATE CLASS OF MEMBERSHIP DESIRED

Subscribing Membership, per year, including Magazine.....	\$4.00
Contributing Membership, per year, including Magazine.....	10.00
Sustaining Membership, per year, including Magazine.....	25.00
Life Membership (no other dues for life), including Magazine.....	100.00
Annual Membership, without Magazine.....	1.00

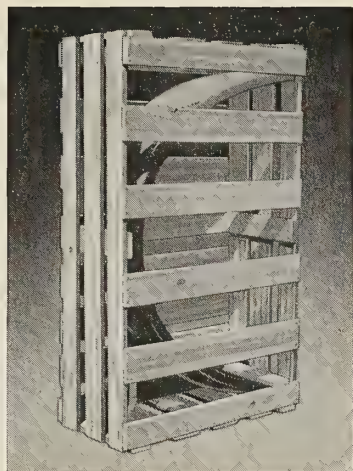
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Occupation.....

Street.....

City.....

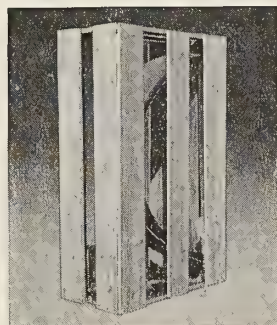
Especially interested in articles on.....



The crate on the left is one of several crates designed by a Weyerhaeuser Crating Engineer for a Detroit Automobile concern. It replaced the crate shown on the right.

The advantages of the new crate are: saving in lumber, reduction in size and weight, lessened labor cost, greater strength.

Another instance of what Weyerhaeuser Crating Engineers are doing for shippers every day.



How Scientific Crating Cuts Down Freight Bills

SHIPPERs today find no joy in the subject of freight rates. So the ability of Weyerhaeuser Crating Engineers to cut tons from freight bills has brought their services into national prominence.

The story of the crate pictured above is characteristic of what scientific crating is accomplishing.

THE new crate, designed to carry an automobile fender, weighs 36 pounds less than the crate it replaced—a reduction in weight of 54.5%. This saving is chiefly the result of using a lighter weight wood. Yet through proper design the new crate is stronger.

The concern for which this and several other crates were designed, estimates a reduction in its freight and express shipping weights of 2,000,000 pounds per year, representing a saving of from \$10,000 to \$15,000.

The new crate requires 3.3 feet less lumber—a saving of 17.9%.

It is two inches less in length and height—an economy in storage and car loading.

The foreman of the shipping room says his men can make two of the new crates in the time required to make one of the old design.

Shippers who have adopted scientific crating report other advantages in addition to factory savings. Good packing insures safe delivery of

merchandise. It eliminates damage claims and speeds up collections. It decreases sales resistance and so gives the salesman a new selling tool. Safe packing builds good will.

Many large concerns are utilizing the service and the facilities which this organization makes available to the industrials of the country.

THE services of Weyerhaeuser Crating Engineers are offered to executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of crating lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser Engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 South La Salle Street, Chicago; 220 Broadway, New York; Lexington Building, Baltimore; and 4th and Robert Streets, St. Paul; and with representatives throughout the country.



WEYERHAEUSER FOREST PRODUCTS
SAINT PAUL • MINNESOTA

Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



Better Work



TO THE man who fells the forest giants, better work means easier, quicker sawing. The name Disston on his saw is his assurance that the fine, serviceable steel, the high standards of workmanship and finish and lasting service that have characterized all Disston products for more than eighty years are helping him to do better work.

Remember—Disston Quality is always in demand and, as it takes time to produce such quality, it is well to anticipate your requirements and order in advance of your needs.

Henry Disston & Sons, Inc.

Makers of "The Saw Most Carpenters Use"

Philadelphia, U. S. A.

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Bangor, Me.
Boston, Mass.
New Orleans

DISSTON

SAWS TOOLS FILES

The Public's Interest

[Continued from page 171]

form an enormous part of the soil of the northwestern states.

"Consequently public authority has the right to say: 'Mr. Lumberman, your operating costs for the conversion of timber must cover such and such practicable requirements, which will leave your land in a productive condition. We do not attempt to forecast what is going to become of this land. We put no restrictions upon your right to dispose of it if you are able to. The land is what we are concerned about. Its idleness would be too great a waste to be endured. We have the right to require you to leave this land in such a condition that there will be a reasonable chance for forest growth upon it, whether you hold it, or whether it goes on the tax-roll, or whether it is bought up by the Federal Government. You may recover the costs of these requirements through adding them to the sale price of your lumber, if you can; you may recover through the sale value of the land itself, if you can. But, however you recover, we are going to have something to say about the condition in which the land is left when your logging operations are over.'

"If we can imagine this much actually done in a fair and reasonable way, if a few simple provisions, by way of fire protection, slash disposal, and the leaving of seed trees or small timber where the type of forest permits, became part of the logging practice, and if these things were taken up everywhere in the logging costs of the region, the knot would be cut and the jam would be broken. The initial expense of reforestation would be placed where it should be, as part of the cost of producing lumber or paper. It would be borne by the consumers of forest products. There is legitimate ground for asking the consumer of lumber or paper to meet this cost, because without it he will pay far more, in the long run, in increased transportation charges on forest-grown material, as the supply gets farther and farther away, than the reforestation of the lands near home would cost under the most refined European methods."

The West Coast Lumberman, in an editorial entitled "A False Note," expresses outspoken disagreement with this doctrine. "To be successful," says the editorial, "the forest-policy legislation must be popular. No attempt must be made to force anybody to do anything. The lumbermen themselves are just as interested in this legislation as the Forest Service or anybody else. There must be no attempt to bear down on the industry or to interfere with inherent rights."

In the opinion of *AMERICAN FORESTRY*, the false note is in the language last quoted. No great problem involving public interests has yet been solved by the formula of requiring no one to do anything. We do not believe that this view reflects the view of the great body of American lumbermen. If it does, the sooner the public knows it, the better. Colonel Greeley's statement, on the other hand, is a frank, moderate, and constructive one, which will be reassuring to a great part of the public and especially to "Young America."

The Passing of the Piney Woods

[Continued from page 136]

Eight-billion-foot cut of southern pine is permanently assured. Because second-growth pine is today on many areas making an annual growth of from one to four hundred feet per acre on sixty million acres, there is absolutely no guarantee that it will continue to do so. Today commercial tracts of second-growth cut by large mills are swept nearly as clean of seed trees as virgin timber lands, and the severity of ensuing fires is increased by the heavier slash. When a second-growth acre is logged under such conditions, growth on that acre ceases and it automatically drops out of the producing column. How, then, may we count on a perpetual cut from an ever-shrinking area of productive forest land?

WHEN TAXES DROP LIKE A PLUMMET

A swift statistical review of our present situation in the piney woods may sharpen the picture as I have drawn it.

About 125 million acres, or 23.5 per cent of the area of the twelve main southern pine states, was once in pine forest. Today agriculture has claimed about 10½ million acres. Between a fifth and a sixth of the original virgin forests remain. Of the hundred million acres that have been cut over, 33 million are wholly without new growth.

Between 1910 and 1920 upward of thirty million acres of virgin and second-growth timber were cut over, while about 7½ million became forthwith idle, waste land. While you read this article, about 100 acres of southern pine timber are being cut over, of which twenty-five acres became waste land.

When the timber is cut from land, the assessable value drops like a plummet. An average acre of standing pine in Louisiana today is assessed at \$45. After the pine is logged the acre is valued at \$5.50. If we assume that the average acre of standing pine in the south is assessed at only one-third as much as the average Louisiana acre, and that the cut-over acre is as valuable throughout the south as in Louisiana, then \$7,500,000 of taxable assets are wiped permanently off the tax books of the south every year by the combination of ax and fire.

There was quite a ceremony at a southern

pine sawmill town the other day, according to the papers. The occasion was the cutting of the last log of the company's timber holdings. When the whistle blew for quitting time, if it was an average Louisiana mill, 77 men were forthwith out of a job. If the output of southern pine drops to eight billion board feet in the next few years, between 80 and 90,000 men must seek employment in other industries.

When the last whistle blows at the aver-

stead of devoting them to a removal of obstacles in the way of improving future conditions. Personally, I cannot feel that the lumbermen were anything more than the instruments through which the American public carried out a mistaken land policy of "getting the public domain into private hands for development." They have not "wasted" any more of their raw material than have most other purveyors to the clamorous American public, which wanted cheap goods (including lumber) in immense quantities.

If here and there lumber companies have attempted to keep fire out of their cut-over lands as a means of encouraging second-growth, they have probably been "burned out" very thoroughly by the local stockmen, whose cattle, sheep, and hogs grazed freely over the company's land. Those lumbermen who earlier practiced conservative cutting as a basis for a prolonged operation have of late years been confronted in some southern states with a merciless tax assessment. I know of more than one company which abandoned its leaving of the smaller timber for growth when a valuation practically equal to that on good stands was placed upon the few hundred feet an acre left for reforestation.

If the southern lumbermen are to be reproached at all, it is for failing to strike hands with the conservationists in the effort to establish forestry departments, backed by wise and adequate laws in the matter particularly of fires, and to reform our system of taxing reforested land. As a manufacturer, the pine operator has always



—Knott, in *The Dallas Morning News*

"THROUGH THE PINE TIMBER BELT"

It takes a cartoonist to bring home, with humorous sarcasm, the tragedy of the passing of the piney woods.

age Louisiana sawmill, as it did in the case above, nearly a carload of lumber drops out of the daily business of the railroad serving the mill. If southern pine falls off to eight billion board feet, nearly a quarter of a million carloads of freight yearly will be lost to our southern railroads.

WHO KILLED COCK ROBIN?

No doubt there are some friends of forestry to whom the above recital of conditions in the piney woods will appear as an indictment of the southern lumberman. They would have us squander our energies in a perfectly fruitless effort to fix upon him the responsibility for our present conditions, in-

cut his virgin timber as clean as the market dictated. As a land-owner, on the other hand, he can certainly be expected to leave his land in a condition to reforest naturally to at least a reasonably full stand. It is my opinion that the majority of operators would be relieved if they could abandon the use of the destructive steam skidder in favor of animal logging; but unless all did this, competition would bear hard upon those who did. Blind and ill-considered opposition by the southern lumberman to all forestry measures in state legislatures is slowly giving way to a conscientious effort to discern the good features of any forestry law and further its passage, while condemning the bad.

THE TRAIL WHICH LEADS OUT

Some features of our present predicament it is too late now to mitigate. As already said, a change to even a measure of conservative cutting would in the case of many sawmills be out of the question. The virgin forests of the south are doomed to virtual extinction before any efforts which we may make now will reclothe acres now idle with merchantable growth. To that we must resign ourselves. The era of the present big mill, cutting far more timber each year than its holdings can grow, must pass. That the big mills may gradually be replaced by small mills, cutting only what is grown, it is necessary that seed trees be left in all present cuttings; that fires, both in the slash and in reseeded areas, be controlled, and that taxes be kept at a low level on reforested land until the ripe trees are actually cut.

The more these essentials can be realized by the voluntary and enlightened interest of the timber owners the better. Today such southern pine operators as the Urania Lumber Company and the Great Southern Lumber Company, the Crossett-Watzek-Gates interests, are showing the way to their skeptical neighbors, while many other firms are laying quiet plans to the same end of continuous operation. Virginia, North Carolina, Louisiana, and Texas are furnishing the educational and legal support necessary to campaigns of fire protection and powerful physical aid as well. The Federal Govern-

ment participates financially in this work. Public regulation of cutting will be necessary only in the rare instances where shortsighted operators refuse to take advantage of improved conditions.

"Informative" or "of general interest; no more," readers of the north and west may say of this picture of the "passing of the piney woods." "The south is in a bad way. Let it take care of itself."

Not so. The north and west can no more wash their hands of the depletion of the south's timber than can Kansas and Nebraska wash their hands of the United States navy. In this account of the waning of the southern pine industry there has been no mention of increasing prices for pine lumber arising out of the depletion of the supply. This is not an oversight. The local price in the producing region for any commodity produced and exported in such vast quantities as southern pine is little affected by a shrinkage in supply of 25, 50, or even higher per cents. Fifteen years from now, when we are at (but not below, we trust!) the seven- or eight-billion-foot production level, the price of pine lumber in the south may have climbed no higher than that of the average commodity. The only difference will be that instead of sending from a half to two-thirds of our lumber into the states of the north and middle west, as we do at present, we will be keeping it nearly all at home.

In the Ohio Valley and the upper Missis-

sippi Valley, in Pennsylvania, New York, and New England, the passing of the piney woods of the south will be felt indeed fifteen years from now. As the American lumber industry migrated first west and then southward, leaving behind it exhausted timberlands, the price level of wholesale lumber has ever since 1840 climbed a little above the level of all commodities.

It is true that the law of supply and demand—that threadbare theme of economists and Heaven-sent alibi of greedy men—has of late years been knocked many times into a cocked hat by such new phenomena as cold storage, combinations of great wealth, world trade, etc. Nevertheless, it will, of course, prevail in the long run. When, therefore, southern pine finally retires from the competitive lumber fields of the north and middle west, Douglas fir and other woods of the west coast will make a Roman holiday of the lumber-consuming public in those regions. Up will go mill prices, freed of serious competition. Add to that, freight charges on hauls up to three thousand miles, and add on top of all the inevitable charges that must be borne by the hapless ultimate consumer who indulges in the use of goods passing long distances through several hands.

Let "enlightened selfishness" prevail, you who gaze from afar upon the passing of the piney woods of the south!

(Photographs by courtesy of the U. S. Forest Service, Southern Pine Association, Turpentine and Rosin Producers' Association, and Linnenkohl.)

FINANCIAL REPORT OF THE AMERICAN FORESTRY ASSOCIATION

There is given below a financial statement of the American Forestry Association for the calendar year 1922, as shown by the audit of R. G. Rankin & Company, Accountants. Members of the Association who desire more detailed information in regard to the financial affairs of the Association may obtain it by writing the secretary, 914 Fourteenth Street N. W., Washington, D. C.

While the new officers of the Association, in beginning their work, have been faced with outstanding unpaid liabilities contracted during the past year, the resources of the Association have been more than adequate to meet them and it is felt that the new year is most promising for the upbuilding of the financial strength of the Association and its work.

The financial management of the Association has been placed on a budget system, thus protecting it against expenditures in excess of its income. It is anticipated, however, that the fi-

nancial returns of the Association during the current year will permit a decided expansion, rather than a curtailment, in its work.

All signs point in this direction. Interest in forestry and all subjects relating to the forests is awakening to an extent undreamed of a few years ago. Every mail is bringing in new members in all parts of the country—people who are interested in the forest and the outdoors which it represents. They see the need of action and they want to help.

The membership of the Association is definitely on the increase. The Board of Directors have approved a special membership campaign with the idea of strengthening the Association numerically and financially to the end that it may be a stronger and wider influence in forest education and forest accomplishment. The best evidence that this campaign will be successful is the gratifying increase in membership during the past two months.

AMERICAN FORESTRY ASSOCIATION. Balance Sheet as at December 31, 1922

ASSETS		LIABILITIES	
Cash		Association Bond	\$10.00
General Fund	\$1,800.81	Accounts Payable	12,128.17
Life Membership Fund	8,676.12	Notes Payable	4,000.00
Sinking Fund	1,421.28	Subscriptions Prepaid	19,706.00
Foresters Fund	6,242.08	Surplus	
	\$18,140.29	Balance, January 1, 1922	\$31,111.24
Investments (Special Funds)		Add:	
J. Smith Bequest	\$5,000.00	Furniture and Fixtures formerly carried in Surplus	2,557.17
Life Membership	8,119.97		\$33,668.41
General Investments	12,550.33	Deduct:	
	25,670.30	Net Loss for the Year Ended Dec. 31, 1922	14,718.56
Accrued Interest on Investments	376.68		18,949.85
Accounts Receivable			\$54,794.02
Advertising	\$1,486.39		
Books	1,562.57		
	3,048.96		
Inventories			
Supplies	100.00		
Furniture and Fixtures	2,894.07		
1923 Convention Expenses Prepaid	470.00		
Special Account Receivable, secured by assets transferred to Trustees	4,093.72		
	\$54,794.02		

CONNECTICUT URGES CARE WITH FIRE

At the suggestion of the Connecticut Forestry Association, Mr. Austin F. Hawes, the State Forester, has had included with all motor licenses issued by the State, an earnest plea to "Help make Connecticut Beautiful by Preventing Forest Fires." This is in the shape of a small printed notice containing brief and pointed suggestions for smokers and campers, urging particular care in the spring as "of the 1,137 woods fires in Connecticut in 1922, 90 per cent were in March, April, and May."

In doing this, Connecticut offers a lead which may well be followed by every state in the Union.

GOVERNMENT TO BUY FLOOD- CONTROL LANDS

The National Forest Reservation Commission has authorized the purchase of 68,566 acres of land for Eastern National Forests, at an average price of \$4.45 per acre. This increases the total acreage to more than 2,200,000, located in twelve National Forests in eleven States, from Maine to Arkansas.

Of this purchase, 29,502 acres will be added to the Allegheny National Forest in Warren, Elk, Forest, and McKean counties, Pennsylvania, on the headwaters of the Allegheny River—one of the sources of the

Pittsburgh flood waters. This is burned-over, cut-over, or second-growth timberland, and includes some merchantable timber, admirably serving the purpose of soil protection and flood-water control.

THIRD NATIONAL CONFERENCE ON STATE PARKS

The Third National Conference on State Parks, which has been called in the interest of State park development, by John Barton Payne, chairman of the Conference Committee, will be held in the Turkey Run State Park, Indiana, on May 7, 8, and 9.

The Turkey Run State Park, in northern Parke County, is an ideal spot for a conference of this nature. It is a tract of virgin wilderness, with great rocky canyons. Along the creek banks in the canyons, perched high on the edge of cliffs, are mighty trees—beech, walnut, sycamore, maple, poplar, and oak—while there is abundant plant, insect, and bird life.

On the morning of May 7 special inter-urban cars will leave Indianapolis for Crawfordsville, a distance of forty-five miles. From Crawfordsville the delegates to the conference will be taken to the park in automobiles furnished by local friends, a drive of 28 miles through interesting and scenic country, reaching the park in time for luncheon. The conference will open at 2 o'clock p. m. on the 7th.

1923 OFFICERS ELECTED BY THE NEW YORK STATE FORESTRY ASSOCIATION

The New York State Forestry Association met and held its election of officers in conjunction with the annual meeting of the American Forestry Association, in New York City, on January 17.

Former State Senator Henry M. Sage, of Albany, was elected president. The new executive committee of the State body is composed of Barrington Moore, of New York; Franklin Moon, dean of the New York State College of Forestry; Ralph Hosmer, professor of forestry, Cornell University; George N. Ostrander, of Albany, of the Empire State Forest Products Association; Augustus S. Houghton, of New York, of the Camp Fire and Adirondack Mount Club, and C. R. Pettis, of Albany, State Superintendent of State Forests. J. R. Simmons, of Albany, was elected forester and secretary. The two associations held a joint luncheon.

MEMORIAL GROVE IDEA GROWS

That the Memorial Grove idea is growing is shown by the establishment of the Gould Redwood Grove and the proposed Hoo-Hoo Grove, in addition to the Bolling and Hickey Memorial Groves donated to the State last year.

THE IRON HORSE OF THE WEST

By BERT P. KIRKLAND

Will appear in the April, 1923, issue of the AMERICAN FORESTRY magazine.

OUR LAST TIMBER FRONTIER is in the West, where the interesting and romantic story of America's last large-scale lumbering is being written with PIECES OF IRON. It is here that the lumber industry is marshalling its great lumber-producing units.

NOWHERE ELSE IN THE WORLD has the harvesting of a timber crop reached the high stage of railroad and machine lumbering as that developed in the West in recent years.

BUT WHAT WILL HAPPEN TO THE WEST when the forest's end is reached and the lumber industry declines.

This will be the fourth of a series of special articles which began in the January, 1923, issue of the American Forestry Magazine.

Other articles of the series which will follow are:

May—"The Blazed Trail of Forest Depletion," by Gifford Pinchot

June—"The Long Haul from the Woods," by Earl H. Clapp

July—"The Land Cry Against the Forest," by P. S. Lovejoy

August—"The Farm and the Forest," by Henry S. Graves

September—"Wild Followers of the Forest," by Aldo Leopold

October—"The Forests of the World," by Raphael Zon

November—"The Coming War for Wood," by Howard F. Weiss

December—"Balancing the Forest Ledger," by William B. Greeley

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NATIONAL FORESTS NOW IN ELEVEN EASTERN STATES

The annual report of the National Forest Reservation Commission shows results of 10 years' progress in developing our Eastern National Forests.

Over 2,000,000 acres have already been acquired by purchase for forests in 11 Eastern States during the ten years that this Commission has functioned. Of this area, the report states, 440,000 acres are in the White Mountains, 74,000 in north-eastern Pennsylvania, and 1,640,000 in the southern Appalachians and the Ozarks. Although the greater part of this land has been recently cut-over and has no timber immediately salable, the income for the last three years has averaged more than \$100,000 a year, of which more than one-third has been turned over to the States.

The report also calls attention to the value of these forests for recreation and the extensive use that is being made of them by tourists. An additional use to which these Federal areas are put is for breeding wild game. There are now 10,000 white-tail deer on the White Mountain National Forest and 2,000 on the Pisgah; elk have been placed on several forests and buffalo on one. On the Shenandoah National Forest, in Virginia and West Virginia, more than 30 bears were killed during the past season. Many of the streams have been stocked with fish.

Attention is called in the report to the

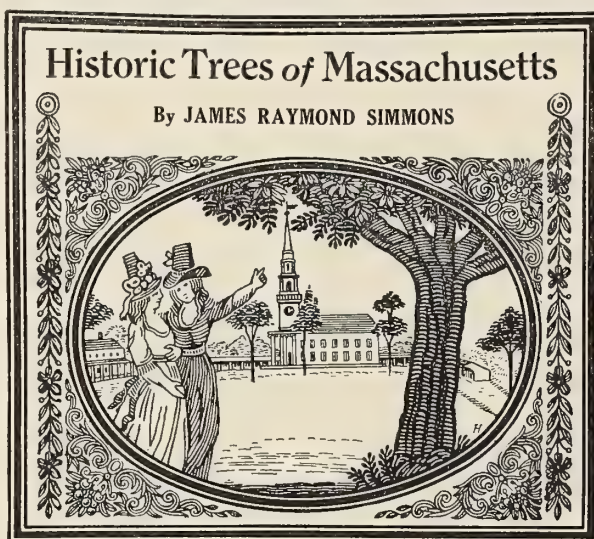
continued decline in the cut of eastern timber, a billion feet having been shipped to the Atlantic Coast from the Pacific the last year. As the eastern timber is cut, there is an enormous and continuously increasing area of cut-over waste and unproductive forest land, the total area of which now amounts to more than 200 million acres. The means employed by State, Federal, and private agencies for making this land again productive are regarded as being entirely inadequate. While, in the opinion of the Commission, the present area of the Eastern National Forests is too small to contribute materially to the timber supply, it is believed that one of the most substantial contributions which the Eastern National Forests are at present making and will continue to make toward assuring a future timber supply is their value as demonstration forests in directing the efforts of private owners. Owners of 316,000 acres of privately owned lands within the purchase units are now protecting their lands and holding them with the object of securing future cuttings of timber from the second growth. This action is the direct result of the influence of the Government's policy in handling the near-by national forest lands.

The Commission urges in its report that appropriations be resumed on their pre-war basis, in order that the purchase of lands for National Forests may be extended to other Eastern States.

Historic Trees of Massachusetts

By JAMES RAYMOND SIMMONS

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For
Tree
Lovers



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Trees have ever been connected with human history. Historic trees are those beneath or near which events of continuing interest in the life of State or Nation have occurred. Massachusetts has more of them than any other State in the Union. Some of them were standing before the Pilgrims landed, and still survive. Mr. Simmons describes them all, and shows most of them in the photographs that illustrate the volume.

"The title of the book suggests a topic of purely local interest. In so far as this suggestion militates against the volume, it is unfortunate, for any outdoor enthusiast, any lover of nature, anyone with an affectionate regard for trees, and even the sober historian of America's unromantic development will enjoy the book. The illustrations are clear sepia-toned photographs that delight the eye, and effect an emotional response. It may be whispered that this volume has been listed in trade journals as an example of beautiful bookmaking."—Chicago Post.

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Mr. Seton is universally beloved because he has the unusual gift of doing three things well: he entertains, he instructs. And in addition he is a most engaging artist. His

pen pictures run all through his books. These are as quaint and full-flavored with the outdoors as are his word pictures. The newest book from his pen is included in this set—WOODLAND TALES—this volume alone has 100 drawings by the author. TWO LITTLE SAVAGES has 300 drawings. And all have half-tone engravings and pen-and-ink drawings of every outdoor subject—from grizzly bears to Indian Wigwams.

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SAVING THE REDWOODS OF CALIFORNIA

The annual report of the Save the Redwoods League, just from the press, marks substantial progress. During the past year 2,000 acres of the redwood forests were rescued from destruction and will be preserved for the enjoyment of future generations.

Important developments in the movement during 1922 are the following:

Establishment, under the State Forestry Board, of the first unit of the Humboldt State Redwood Park, containing more than 2,000 acres.

Determination of policy by State Highway Commission whereby timber on rights of way through the Redwood Belt will be preserved. The gift by the Lagoon Lumber Company of a stretch of timber along the projected State Highway north of Eureka is in accord with this policy.

Action by the Concatenated Order of Hoo-Hoo, the national lumbermen's fraternal organization, approving the purchase and establishment of a Hoo-Hoo Redwood Grove. This is the first of a series of groves which, it is expected, will be preserved by various fraternal societies of the nation.

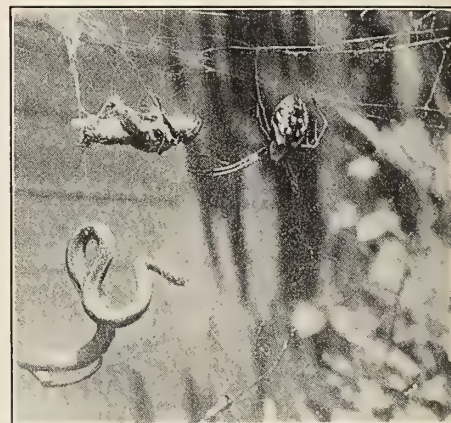
The league has been in touch with the county boards of supervisors and with citizens in the counties containing the redwoods, to the end that local action may preserve some of these trees.

In regard to the Redwood National Park, Assistant Director Horace M. Albright, of the National Park Service, was this summer detailed by Director Stephen T. Mather to make an extensive study of the problem and was in frequent conference with officers of the league. Action by Congress on this subject is hoped for soon.

DECLINE IN LUMBER OUTPUT

There has been a marked and fairly steady decline in our national output of lumber from about 46,000,000,000 board feet in 1906 to less than 34,000,000,000 board feet in 1920, according to the Forest Service. The decline in the production of lumber and the increase in population have resulted in a striking drop in the per capita consumption of lumber—from over 500 board feet per person in 1906 to about 320 board feet in 1920.

"I want to congratulate you on the excellent appearance and subject matter in the December issue of the magazine. The articles are most timely and the illustrations most attractive."—Nelson C. Brown.



SPIDER KILLS SNAKE

This spider, which caught a snake, is of the black and yellow kind common in country regions among bushes or along the roadside. This particular spider was very large, being about 2½ inches long, including the legs. The web was about 20 inches across and stretched across an open space between a fence and some bushes. The web was very light, but strong, and was made in a flat circle with the spider in the center at all times, with his head down, as shown in illustration. The snake was of the common brown variety, about 6 inches long and ¼ inch thick, which subsists on bugs, spiders, etc. This snake was in a bush over the web and on seeing the spider, decided to drop on the latter or knock him from the web and then catch him when he fell to the ground.

But his plans were clearly a failure, for when he dropped he missed the spider and became entangled in the web. Like a flash the spider was upon him, and wound many yards of web around the intruder, thus holding him fast. The spider afterwards killed the prisoner with his bites and then sucked his blood.—H. E. Zimmerman.

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NEW ENGLAND BANK AIDS WOODLOT OWNERS

An important step has been taken by the officials of the Federal Land Bank of Springfield, Massachusetts, to encourage the practice of forestry by farmers, through securing a more accurate knowledge of the contents of their standing timber. Woodlots of pine or hardwoods are considered by these officials as giving a farm a considerably increased loan value. The ability of the farmer to secure a fair stumpage price for his timber when he sells it is thus of direct interest in administering Federal loans.

To enable woodland owners to estimate the contents of their own timber and to translate a flat price offered by purchasers for the entire lot into the true price per 1,000 board feet on the stump, the bank has put out a cruising stick for measuring the contents of standing trees. By holding this stick horizontally against the tree at 4½ feet from the ground, the diameter at that point can be measured. The same stick, held in a vertical position, when distant 59 feet from the tree, indicates the number of 16-foot logs which it contains up to any given point on the bole. Then, under the corresponding diameter and log length, the volume of the tree is read from the values placed on the stick.

With this stick a woodlot owner can, with a little care, arrive at within 5 to 10 per cent of the actual sawed contents of his standing timber.

A second stick is supplied, on which is printed the values of the international ¼-inch log rule. This can be used to scale the board-foot contents of sawed logs, or, if desired, to estimate the contents of any log in a standing tree, by determining first by eye the diameter inside bark of the small end of the log.

The general adoption by farmers and woodlot owners of the use of this stick would go far toward putting their woodlots on a more practical basis as the producers of crops of timber for profit.

LUMBER FOR CRATES AND BOXES

Approximately 16 per cent of our lumber goes into crates and boxes, according to the Forest Service. The failure of containers in shipment results in enormous annual losses. New and valuable information on the causes of weakness and how the requisite strength can be secured with more economical use of material has been recently obtained by the Forest Products Laboratory, Madison, Wisconsin.

"I wish to congratulate you on the January number of AMERICAN FORESTRY. It is a fine piece of work."—*A. W. Schorger.*

"I think our magazine is mighty good."—*D. Blakely Hoar.*

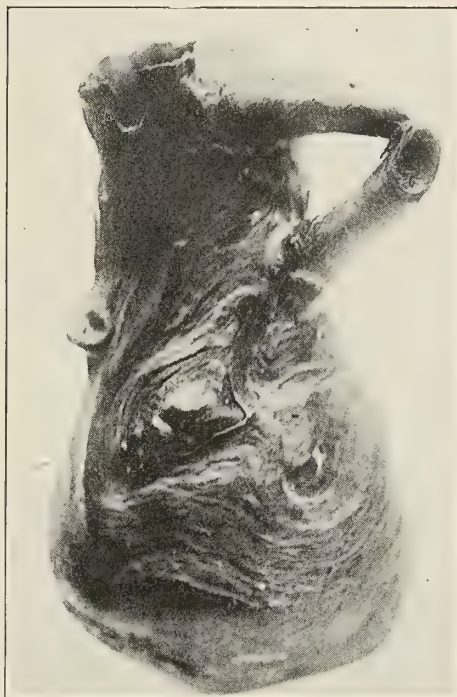
"AMERICAN FORESTRY is of great help and inspiration to all of us."—*Charles L. Clark.*

FORESTRY FILM SHOWS WORK IN NEBRASKA SANDHILLS

The transformation of 200,000 acres of waste lands, in the sandhill section of western Nebraska, into a thriving National Forest is the thrilling story told in a new motion picture, "Foresteering a Desert." The film visualizes the efforts of the Forest Service to replenish Uncle Sam's vanishing timber resources and proves the practicability of a forest crop for the utilization of waste lands.

The story begins with the advent of the early pioneers, who, weary of the Overland Trail and the lumbering prairie schooner, built homes of sod and grazed their herds upon the sunbaked sandhill range. Scenes carry on to the motoring prairie rancher of today. An exciting moment shows the forest builders fighting a raging prairie fire in a desperate effort to prevent the flames from reaching the new man-made timber reserve.

Scientific nursery practices employed in growing the millions of young pines and planting them at the rate of 75,000 trees a day are included. "Foresteering a Desert" will be loaned free, for short periods, by the United States Department of Agriculture, or copies may be purchased at the cost of printing. The film is one reel in length.



ROOT-GROWN PITCHER

Henry Schoenborn, of Oregon City, Oregon, while making a road on his farm near the city, grubbed out a root that had grown in the shape of a pitcher. It has a well formed handle, is hollow, and holds about a quart of water. It is 12 inches high, round shaped, and flat on the bottom.—*H. E. Zimmerman.*

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"I was much pleased with the February number of AMERICAN FORESTRY. It gets better and better. I think the February number is one of the best we have had in several years. I like your new paper and your new type."—*Charles Lathrop Pack.*

"I was very glad to note the splendid improvement in your organization and feel sure that your plans are going to be a wonderful help in the future success of the AMERICAN FORESTRY magazine."—*Joseph P. Smith.*

FORESTRY TRAINING In the Heart of the Rockies

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Write for announcement giving full information.

SPORTSMEN STRONGLY ENDORSE FOREST FIRE PREVENTION

Under the joint auspices of the North Carolina Forestry Association and the State Geological and Economic Survey, the twelfth annual Forestry Convention was held at Pinehurst, North Carolina, January 23 and 24.

The general subject considered was "The Protection of Forests and Wild Life," selected with the object of helping forward the movement, which has recently been revived, for the establishment of a State Game Commission and a State-wide game law. Major Goldman, of the U. S. Biological Survey, stated that fires not only destroy young growth, but eliminate game, often destroying it entirely in large conflagrations. Fire invariably drives it out to unburned areas, where it becomes so concentrated that there is not sufficient food to support it, and disease and death are the results. While fires remove the cover which protects game and other wild life from its natural enemies, it also destroys the nests and nesting places of many birds.

Mr. Bailey T. Groome, secretary of the recently organized State Game and Fish Development League, brought out very clearly the community of interests of the foresters and sportsmen and pleaded for the active co-operation of the former in securing a State-wide game law which should include a commission and game wardens, a gun and rod license, a bag limit, and provision for fish hatcheries.

Major Goldman, replying to questions regarding the effect of forest fires on fish in the streams, said that the fish were injured by the removal of the shade, by the ashes run into the streams, by subsequent rains, by the increased temperature of the water, and by the drying up of streams.

Mr. F. W. Reed, Assistant U. S. Forester in charge of the National Forests of the East, stated that the prevention of annual burning is doing as much to bring the trout back as is the getting rid of dynamiters and hog-fishermen.

EASTERN LUMBER CUT DECREASES

The cut of lumber is decreasing in all the Eastern States; in practically every State west of the Great Plains it is increasing, says the Forest Service. The principal source of softwood lumber for the entire nation will soon have shifted to the west coast, and the average freight cost paid by the home builder or manufacturer will have advanced to a new and higher level.

Before You Leave a Camp Fire

Be Sure It's Out

ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

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AMERICAN FORESTRY



VOLUME 29

April, 1923

NUMBER 352

Farming for a Pine Crop

New York's Beaver Problem

What Do Tourists Want?

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The American Forestry Association

Washington, D. C.

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IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1919 shows our forests annually supply over two billion dollars' worth of products; employ

755,000 people; pay \$773,000,000 in wages; cover 470,000,000 acres not required for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organizations, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

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Classifications by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

APRIL, 1923

No. 352

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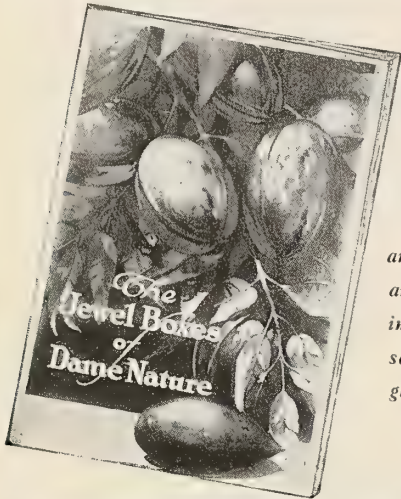
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Know then this inspiring truth, O Seeker!
The rosy dawn of thy life's opportunity lieth not in the glist'ning
temples that point their proud spires t'ward the sky.
But the field of Fortune lies in the fruit of the stately trees that
ripens to the sun's kiss in yon golden meadow—for here in those



acres of rich-laden
branches joyfully cling
the Jewel Boxes of
Dame Nature.
Down through the ages
man hath found true
nourishment for body
and mind—sweet repose
and blissful tranquillity—
in these noble, stalwart
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AMERICAN FORESTRY

VOL. 29

APRIL, 1923

No. 352

Farming the Forest for a Pine Crop

BY CHARLES E. RANDALL

FORTY-FOUR years ago a New Hampshire farmer, finding time hanging heavy on his hands, dug up some native seedling white pines from a near-by forest and replanted them on an abandoned three-acre hillside pasture. The total cost at the time, counting the value of the land and the labor of planting, was \$35. Nearly twenty years later the farmer died, and among his assets was this small tract of young pine, for which, much to her surprise, the widow was offered \$300. The second owner retained it for about fifteen years, and then, needing some cash, sold it. Soon afterwards it was purchased by the present owner, a lumber company, for something over a thousand dollars. Today the timber is worth over \$1,500 on the stump. With taxes and supervision for

the period estimated at \$2 an acre a year, the operation has yielded a return of 5 per cent on the total investment in land, labor, and annual outlay, and in addition a sum equivalent to a yearly net profit from the start of \$2.34 an acre.

Numerous examples of this character are awakening many New England farmers to the fact that a forest crop is as good as an account in the savings bank. More and more they are coming to regard pine trees as a real "crop," to be grown and harvested the same as hay or fruit crops. In a good natural stand of timber, a little care and, in comparison with most crops, a very little care, assures a balance in the farm bank account. Also, the only fertilizer the woodlot requires is the intelligent application of



(Bureau of Plant Industry)

THE TAX PAYERS

Town forests are becoming popular. This is a well-kept town forest at Keene, New Hampshire, showing mature trees and excellent reproduction, which in the future will help to pay the town taxes.

the ax at harvest time. Of course, if the trees are not there at the start, the farmer must do the planting instead of Mother Nature.

The farmer who plants his own forest must first select the right kind of tree. Palm trees won't grow in Alaska or fir trees in Florida, and the same thing applies to other trees in other places. Therefore, he will choose and plant the kind of trees which, in view of their adaptability to the soil, climate, and trade requirements, are most certain to yield the largest profit. Throughout most of New England, the Middle Atlantic, and Lake States, the white pine will be generally selected for crop purposes. In its statement, that "of all the trees of the Lake States, white

white-pine stand has a present value from the time of its seeding, and year by year that value increases at such a healthy rate that it is not necessary to wait half a century before any profits accrue.

In Minnesota, the State Board of Forestry finds that a good natural stand of young white pine will put on wood at the rate of 550 to 850 board feet an acre each year, just like a corn-fed hog puts on weight. With prices of second-growth white pine "on the stump" at about \$7.50 a thousand for the Lake States, each acre of young timber increases in value at the rate of \$4.12 to \$6.38 a year. A thirty-year-old stand in Cook County, Minnesota, growing on gravelly and rocky land, is increasing at the rate



A WHITE-PINE SAVINGS BANK

(Michigan Agricultural College)

One frequently hears it said that money in young pine is more profitable than in a savings bank, and this thrifty young stand, established at the Michigan Agricultural College twenty-six years ago, is a "proof of the pudding." Its value today is \$165 an acre, which represents 6½ per cent annually on the original cost of planting.

pine best combines the qualities of utility, rapid growth, heavy yield, and easy management, that make for the desirable forest crop," the Minnesota State Board of Forestry has very well expressed the desirability of this tree.

YOUNG PINE GROWS INTO DOLLARS

With timber being harvested four times as fast as grown, every one realizes the value of a full-grown forest, but he naturally asks, "How can I put time, energy, and money into the planting and care of a young white-pine stand, when the trees won't be ready to cut for lumber until I've passed on?" One doesn't do such things unless it pays, and few are sufficiently altruistic to provide a crop for the welfare of future generations. However, it not only pays to raise a pine crop, but it is being done more and more, particularly in white-pine regions. A

of 1,000 board feet an acre each year, or, in dollars and cents, an added value of \$7.50 an acre every year. Moreover, stumpage prices are gradually rising.

White-pine forests, properly managed, have already proved their ability to pay as much interest on the invested capital as any other equally safe investment; also, the owner does not have to wait for the young pine crop to reach maturity in order to dispose of it at a profit. In New England and New York he can readily sell it at a fair market value, as there is always a demand for good stands of white pine. In these States one frequently hears the statement that money in young pine is more profitable than in a savings bank.

The value of this crop is typically illustrated by two acres of white pine located near Keene, New Hampshire. These two acres of pine were sold at pre-war prices for \$2,000 on the stump. The stand contained 170,000 board



FORESTS OF THE FUTURE

(Bureau of Plant Industry)

These white-pine mothers and their progeny are awakening New England farmers to the fact that a healthy young pine plantation brings a splendid return on the invested capital.

feet, or an average of 85,000 feet an acre. As the trees were from eighty to eighty-five years old, the growth on each acre was approximately a thousand feet a year, yielding a gross yearly return of about \$12.20. The soil is sandy and of little value for raising other crops.

A CHRISTMAS ACCOUNT OF \$365

Last year a pine lot containing one hundred thirty-two acres near Stratford, Massachusetts, which 65 years ago was a pasture, yielded 1,560,000 board feet of white pine. This yield was reduced somewhat because ten acres were cut over for firewood several years before the crop was harvested. Another instance came to the writer's atten-

tion where a piece of pine land in York County, Maine, was bought recently which had been cut practically bare in 1885. At that time it could have been bought for \$3 an acre, but now the value of the timber is worth \$200 an acre. In New York State a farmer has a 115-acre woodlot so managed as to yield him a continuous profit of \$1 a day. He cuts an annual crop of seventy-five cords of mixed woods at a profit of \$4.85 a cord, or \$364.50 a year. If we knock off Christmas morning as a time when even woodlots should cease to work, the farmer is left with an income of a dollar a day.

These profits are usually taken from land that is entirely unfit for any other use and would otherwise be classed



CASHING IN ON THE WOOD CROP

(Minnesota State Forest Service)

Minnesota farmers count themselves fortunate when they have a wood crop to harvest during the long, dull winter months, when other farm activities are at a standstill. This photograph shows them marketing their tie crops at a railroad loading point.

as waste. A hillside may be so steep that a mountain goat would have difficulty in climbing it, or the ground may be so rocky that it is rank flattery to call it soil, and yet it will yield a profitable crop of white pine. This type of land, when not used to produce a pine crop, is not worth the taxes paid on it, but with a little care and the expenditure of a small amount of money, it produces profits for the owner and taxes for the township, State, and nation.

The cry about the growing scarcity of timber is not only familiar, but significant. It means that the demand for the forest crop will constantly increase. In the days of "inexhaustible" white pine, Wisconsin, Michigan, and Minnesota were supplying the lumber markets from the Atlantic Ocean to the Rockies and from Canada to the Gulf. Now they are not able to supply their own needs for lumber and have to pay high freight rates on lumber from the Pacific coast. Most of the larger logging companies now operating in that region are "cutting out" within the next ten years, and another decade will see the practical exhaustion of their commercial supplies of white pine. Then what will prices be?

TIMES ARE CHANGING IN NEW ENGLAND

Because of its unsurpassed qualities, white-pine wood is used in forty-five of the fifty-three wood-working industries in this country. It will continue to be in demand, and in New England the people know it. If the New England farmer can list, among the blessings that he is thankful for on Thanksgiving Day, a woodlot containing a healthy young stand of pine, he kills an extra large turkey. They realize the value of the white-pine crop to such an extent that they are planting the trees more and more as a business investment.

More interesting still, many owners are learning ways in which to secure adequate natural seeding on abandoned land. When land which is fit only for the growing of timber is being made to yield a return of 4, 6, and sometimes as high as 10 per cent, it is worth putting to work. Once "developing" land meant clearing it, but times have changed, and it is now good business to develop a pine

crop on cleared land when the soil is too poor for more profitable use.

Several forward-looking States are beginning to farm the forests. Massachusetts has set about securing 250,000 acres of "waste land" suitable for the production of timber and expects to replant and operate these State forests at a large profit, thereby reducing the State debt. New York also believes it is a good investment and in 1916 appropriated \$10,000,000 by a referendum for the purchase and reforestation of forest land. In Maine one-half to three-quarters of the whole State will unquestionably always be

permanent forest, partly State and partly privately owned. Pennsylvania has already acquired more than a million acres for State forests and is spending a half million dollars annually in forest protection. This year it increased its biennial appropriation by more than three-quarters of a million.

Town forests are becoming popular. Otsego County, New York, is planting forests in each of her twenty-four townships, and the citizens sit back and rub their hands together and look forward to the day when these forests will be helping to meet the taxes. In Massachusetts sixteen towns have acquired municipal forests and plans are being made to establish many more. They know that many European towns pay no local taxes, because the municipal forests do it.

As in any other phase of

farming, the first problem is to protect the crop against destruction by fire, insects, and disease. The enemies of white pine are not numerous, but a few of them are serious. Fires must be kept out of the woodlot, and cattle also, if the best growth is to be obtained. The white-pine weevil causes considerable damage to young white pine in some localities, but seldom kills the trees. Its work can be checked by cutting out and burning the tips of infested trees at the proper season.

WATCH OUT FOR THIS SLY CUSTOMER

At the present time, because of its future effect on the white-pine industry if allowed to spread unchecked, the most serious enemy of white pine is unquestionably the

[Continued on page 250]



(Bureau of Plant Industry)

WHITE PINE'S WORST ENEMY

A young white pine badly infested with blister rust. When this disease once takes hold of a pine, that tree, in most cases, is doomed.



New York's Beaver Problem

BY ERNEST D. LEET

HALFWAY between Sacandaga and Piseco Lakes, in the shelter of the Adirondacks, lies a little pearl of water, scarcely a quarter of a mile across, peeping out through a halo of virgin forest. Hardly to be called a lake, it is one of those scattered and sequestered pools that nestle

deep in a blanket of protecting foliage. Surrounded only by the peaceful quiet of the forest, it seems immune to artificial influence, content with nature's setting.

Less than five years ago this little pond was one of the most accessible and delightful assets of which a certain piece of property could boast. Its shores were skirted with a border of tamaracks and wild cranberry bushes, with here and there a birch or balsam. Though seldom visited, except by an occasional fisherman, it had a beauty all its own, unscathed by man's approach.

Today its shoreline of green foliage has given way to a fringe of desolation. Water has flooded over the banks, killing the timber and creating a marsh that renders the lake unapproachable. Tamaracks and birch have given way to a twisted mass of fallen trees that defies penetration. Little of the timber thus destroyed can be saved. But that is not the serious factor. The real damage lies in the destruction of beautiful scenery, which can never be estimated or replaced. As far as scenic value is concerned, the lake might as well not exist.

Such is the effect of beavers at large in the Adirondacks. This little lake at the foot of Fish Mountain, seven miles beyond Lake Pleasant, is but one spot among

ARE beavers threatening the natural beauty of the forests of the Adirondacks? Mr. Leet thinks they have become a real menace. A few pairs liberated in 1905 have now spread throughout that entire area, carrying with them destruction to timber and damage to the scenic value of many lakes and hitherto running streams.

How thousands of acres are being converted into stagnant pools, abounding with sink-holes and dead timber, furnishes the basis of an interesting article upon the beaver problem, one which now seriously confronts the New York State Conservation Commission.

hundreds which beavers have rendered desolate. By placing a dam across an outlet, they raise the water-level at least four or five feet, and often more, invariably flooding several acres above the dam with stagnant water. Unless the dam is immediately destroyed, timber and the surrounding veg-

etation are killed outright or die in a short time.

These beaver dams are constructed of freshly cut boughs, imbedded in a plaster of mud, and held in place by a network of twigs. Sometimes a log of a fallen tree serves as a foundation. The entire mass is packed and twined together with almost uncanny precision, and by frequent strengthening a beaver dam often becomes a solid wall, capable of withstanding enormous pressure.

While still inhabited, the dam is kept in constant repair. Even large breaks are mended over night, always with new material. Dynamiting fails to shake the beaver persistence; dams may be destroyed time and again, only to be rebuilt more firmly than ever.

In addition to their stubborn determination to rebuild, beavers are continually migrating to new surroundings. They subsist mainly on bark, twigs, and the roots of water plants. As the supply of this food decreases in one locality, they will change to one more favorable, often but a short distance up the same stream. They abandon the old dam and their adjoining lodges to start in entirely new. Yet the destruction done by these former strongholds ever remains. Whole valleys are often found converted into almost impassable marsh, where it is unsafe

to step without first testing the ground for fear of sink-holes. Running streams give way to endless mire; sweet waters have become stagnant.

It is difficult to make any kind of a working estimate as to the amount of harm that beavers have done in the Adirondacks. Several years ago the Conservation Commission began to realize the extent of the damage, and the forest rang-

ers were notified to obtain estimates and report upon the number of dams, area flooded, and value of the timber destroyed.

On the strength of this first report in 1919, together with those obtained since, the last survey being made in

tection and preservation of our Adirondack forests.

BEAVERS IMPORTED TO KEEP FORESTS NATURAL

Before going further into the amount of destruction which can be traced to beavers, let us consider briefly the

October of 1922, it is safe to place the damage done by beavers within this period at more than a quarter of a million dollars. Whereas this estimate may not appear appalling, it is a thorn in the side of our conservation policy. The figures of 1919 and 1920 showed considerable damage, but the figures of 1922 clearly demonstrate that some solution must be found, and at once, for the adequate pro-



THE BEAVER LODGE

It usually adjoins the dam and serves as the family headquarters. Beavers are master-builders and are wonderfully expert in transporting small logs, sticks, rocks, and mud used in building their dams and lodges.



A BEAVER LAKE

Also a typical beaver dam showing how thousands of acres in the Adirondacks are being flooded with stagnant water, killing the timber and threatening the scenic beauty of lakes and streams. Beaver dams are built to last for many generations and are quickly rebuilt when destroyed by man.

history of their development in the Adirondacks. Back in the days before the Revolution, the fur of this semi-aquatic animal was one of the principal articles of barter between the Indians and the early Dutch traders. The fur itself, of a reddish brown color mixed with gray, brought a high price, which gave a great stimulus to trapping. Gradually the beaver began to grow scarce, following the fate of his European brother, until practically extinct.



HARMLESS ENOUGH LOOKING, BUT—

This picture shows a trail in the woods obstructed by trees felled by busy beavers, and a fine specimen animal—a gentle old fellow weighing thirty-five pounds, caught in a pitfall.



Twelfth

Annual Report

of the State Conservation Commission, show that 1,184 dams have been built since 1920, a total of 7,863 acres flooded, and timber to the value of \$100,020 killed by flooding. Adding these figures to those of 1919 and 1920, a total of 1,930 dams have flooded 17,614 acres, with damage estimated at \$154,855. The report continues, however, that, owing to the large area of the ranger districts and the brief time allotted the rangers for making this survey, it would be safe to multiply these figures by two and still have a conservative estimate of the damage done by beavers.

Although a large part of the destruction is confined to State property, yet several thousand acres of private land

of Lake Ontario, and Washington County, on the farther side of the Hudson and Lake George, seem to have escaped any appreciable share of the destruction.

In St. Lawrence County the beavers have become so destructive, especially along the river, as to necessitate immediate steps to put an end to their ravages. Owners of islands in Canadian and United States waters have been given permission by the Dominion Government to exterminate them on the Canadian side of the boundary.

For a quarter of a century beavers had not been seen along the St. Lawrence until their presence was revealed last spring by a number of fallen trees that had been gnawed through at the base. Whereas they are still protected by game laws on the New York side of the river, the owners of property on the Canadian side have engaged an experienced trapper for the season, with headquarters on Dillingham's Island, near Brockville, Ontario.

DAMAGE DONE BY BEAVERS

The latest figures on the beaver situation in the Adirondacks, as included in the

With the movement to preserve our State and national forests and keep them as much in the natural state as possible, a few pairs were liberated in the northern part of Herkimer and Hamilton counties in 1905. From that beginning the beavers have multiplied so rapidly that they may now be found in practically every county of the Adirondack region. Judging from the way their numbers have increased in the past two years, they are not only becoming a nuisance, but they are exacting heavy toll from our timber resources.

The greatest amount of damage, according to the reports of the forest rangers in October, is still being done in the two counties where the beavers were first liberated. Since 1920 more dams have been abandoned in the Herkimer County section than have been built, and the number reported from Lewis and Franklin counties have rapidly increased. Only Jefferson County, at the eastern end



AN UNFINISHED JOB

In felling large trees the beaver puts in several nights of hard work, but when the job is finished he has a food supply for his family which will last several weeks.

have been flooded, with enormous killing of timber. The report of 1919 estimated that two-thirds of the area flooded and seven-eighths of the timber damaged was on State property. The 1922 figures indicate that 3,484 acres of private land have been flooded, as compared with 4,379 acres of State land; \$16,625 worth of private timber has been killed by flooding, as against \$83,395 worth of State timber. Provided dams could be destroyed at once, it is estimated that \$10,100 worth of the timber could be salvaged, either for pulpwood or for lumber.

The average area that is flooded by each dam is from six and a half to seven acres. Of course, it is true that in some places land is flooded which is of comparatively little value. The timber may have been cleared or the tract may have been burned over, so that the actual damage is negligible. The fact remains, however, that dams are more often built in spots surrounded by virgin timber, where large quantities of trees are killed outright. For each dam built, whether upon State or private property, some one has to pay approximately \$85 or \$90.

The welfare of the State depends upon strict adherence to a sound and far-seeing policy for the conservation of our natural resources. It is not only a matter of timber value in dollars and cents that forests should be protected, but it is for the benefit of future generations. The large tracts of wooded land set aside as State and national parks furnish a vast playground which is becoming more and more accessible to the oft-heralded "average citizen."

The rapid strides in the development of State highways and the ever-growing use of automobiles bring nature almost to our very door. Anything that can be done to help preserve our forests or protect their natural beauty from exploitation is not only justified, but highly desirable.

TIME TO CURB THE BEAVER

The preservation of wild life is just as important as that of our forests and lakes. Many of our animals have disappeared; others would now be extinct if it were not for the protection of game laws. The effort to keep our resources in their natural state as far as possible requires that the rules laid down by the Conservation Commission be fully enforced. The more of the different animals that can be kept alive to populate our forests, the better it will be. Yet when any animal increases so rapidly as to become a nuisance, it is time that artificial rules for his protection be removed.

Since the beavers were planted in the Adirondacks, eighteen years ago, they have been protected by the State game laws. No open season has been allowed. As a result, they have multiplied without the least interference, and naturally they have come to overrun the entire Adirondack region.

Not only have beavers been doing wide-spread damage



BEAVER WORK

This poplar tree has been felled by beavers, which are famous wood-cutters. They use the tree for food and building purposes, selecting usually trees under five inches in diameter. As this picture shows, they occasionally attack and fell trees a foot and a half or more in diameter.

to timber and property, but interviews with forest rangers and woodsmen about the Racquette Lake section indicate that they are actually killing the deer. During the winter, deer can obtain their drinking water only from running streams. When beavers construct a dam across a water outlet, pools are formed which freeze over, leaving no stream at all which can withstand the formation of ice.

The deer come down to the edge of these ponds for water, and, being unable to break the crust, they are forced to turn back. For a time they can satisfy their thirst by licking the snow, but unless they can find some running stream, they are bound to succumb. Forest rangers who have followed the trail of these winter-stricken deer have actually reported death caused by this inability to get drinking water.

Two steps have been taken by the Conservation Commission to counteract the increasing damage that beavers

Secondly, beavers are so prone to rebuild that they waste no time in collecting the materials together, and soon the flow of water will once more be stopped. Small breaks, five or six feet wide, are repaired over night. Even when the dam is blasted to pieces, they will set to work to construct another on the same spot, each time felling more timber. For this reason, the problem cannot be solved unless the animals can be taken.

The second means, allowing the owners of damaged property to kill beavers on condition that the skins shall be sent to Albany, has been hardly more effective than the first. As beavers operate chiefly at night, the only way they can be reasonably captured is by trapping. There are few property-owners that have the necessary experience or the time available to devote to trapping beavers, especially when they would have to send in the pelts to the State. Many are unwilling to hire others to



AN AREA "CUT OVER" BY BEAVERS

The photograph, taken in Wisconsin, shows how beavers sometimes demolish young stands of aspen. Species of the genus *populus* are their favorite food. Note that they have left no brush to cause forest fires; neither have they left much young timber for a new forest.

have brought in the Adirondacks. Permits have been granted to private land-owners to remove dams where they are proving destructive, and they have also been allowed, upon application, to take the animals, provided the skins were sent in to the Commission. Forest rangers and game wardens have constantly been forced to tear out beaver dams on the State forest preserve in order to save the timber. Experience has shown neither of these two methods effective. The State must certainly realize that some further means must be employed.

A CASE OF DYNAMITE AND CAPTURE

Merely breaking up dams, whether it is done by the forest rangers or by individual property-owners, can never be an adequate check upon the beaver menace. In the first place, the dams are so constructed that it is difficult and sometimes impossible to break through. Only dynamite can serve to effectively dislodge one of these walls of mud and twisted boughs.

take the animals for them, because they would receive no proceeds from the skins to repay them for their expense and inconvenience.

As a result, there has been enormous destruction to private property, for which the owners could obtain no redress from the State government. A number of cases have been brought to court in which property-owners were seeking to obtain compensation for damage done by beavers. In each case the decision was in favor of the State, which refuses to be held responsible for such damage, in spite of the fact that the beavers are protected by its duly recognized game laws.

COMMISSION ADVOCATES OPEN SEASON FOR BEAVERS

Following its first survey in 1919, the Conservation Commission recognized the fact that the removal of protection on beavers for a short open season would probably

[Continued on page 248]



A VIRGIN FOREST OF DOUGLAS FIR

The fir forests of the Pacific Northwest form a large part of our last great reservoir of timber. More and more the nation is turning to these forests for its wood supply. To convert the giant trees into lumber and haul them across the continent by rail, or through the Panama Canal by boat, to eastern markets is an economic cost chargeable to forest improvidence in the east and a cost which the lumber consumer pays in cash.

The Iron Horse of the West

BY BURT P. KIRKLAND

PRESIDENT Roosevelt stated that he expected to see American foresters develop a distinctively American system of forestry, meaning thereby not that the knowledge gained by years of Old World experience should be ignored, but that American forestry, to meet the responsibilities placed upon it, must adapt itself to modern industry. No better illustration of the imperious necessity of such adaptation is available than that of the Pacific Northwest. Contrast conditions here, where modern industry, exemplified by steam and electric logging and huge sawmills cutting up to 500,000 feet a day, with the industrial conditions of Europe, where in the first part of the 19th century and earlier her people, through the slow process of trial and error, were learning to make forest lands yield continuous supplies of forest products. Our modern methods of forest slaughter, coupled with world-wide means of transport, remove from our forests in a single year as much as the demand in a decade upon the German forests of that early period. Therefore, if our forests are to be made to serve us permanently, as European forests have served, we must proceed with rapidity to the solution of our forest problems.

The pressing nature of these problems is still further clear when the world-wide situation in forest supplies is considered. A survey of world supplies shows that the

Pacific Northwest contains the last great stand of old coniferous timber yielding large percentages of clear first-quality timber. The current growth of coniferous timber which the rest of the world produces, while entirely satisfactory for structural purposes and similar needs, does not meet the special requirements of interior finish, flooring, veneers, and the myriad uses which only clear growth from old trees can fill. This again explains the speed with which production accelerates, and if we do not guard carefully, forest destruction in this region will proceed more rapidly than the work of repair.

OUR FOREST HERITAGE

The equable temperatures and moist air currents from the Pacific have led to the growth of the largest coniferous forests in the world. The redwoods of northern California coast have accumulated wood volumes of 300,000 feet an acre over considerable areas, while the Douglas fir of the Northwest is a close second, covering very large areas with stands of 50,000 to 150,000 feet an acre. It is, however, a mistake to suppose that such stands have ever been universal in this region at any time in its past history.

Before the coming of the white man, fires set by the Indians and by lightning burned over large areas from time to time. From some limited areas fires appear to



AN IRON HORSE AND ITS BURDEN

(Courtesy U. S. Forest Service)

This is one type of logging engine commonly seen in the forest regions of the West. Old-fashioned looking, you will say, but it is mighty powerful, nevertheless, as can readily be seen from the mammoth logs of Sitka spruce it is here transporting to the sawmill.



(Photograph by A. M. Prentiss)

THE "FLYING SPRUCE"

This is a giant Sitka spruce, typical of those wonderful trees which supplied airplane spruce to the Allies during the late war. It is probable that never in the history of nations has a tree been more eagerly sought after than was the Sitka spruce in those war years. Its commercial range is limited to a strip about forty miles wide along the coast of Oregon and Washington.

have been absent for periods as long as 1,000 years, but the typical old forest of the Northwest does not exceed 300 to 500 years in age. Moreover, young forests twenty to one hundred years of age following former fires are equally typical of the region. Thus, at the beginning of white settlement this region was by no means an unbroken forest of old timber. It has been estimated that the average stand of that period did not exceed one-third of the acreage volume that a Douglas fir stand is capable of attaining. Thus we see that nature unaided does not produce maximum possibilities in forest production any more than in agricultural production.

This brings us to our first conclusion, viz., that even in their virgin condition these coast forests contained little, if any, excess timber above the volume they must always contain if they are to yield continuously, for every forest under continuous yield must contain a large stock of growing timber from which an amount equal to the annual growth is cut annually from the trees that have reached maturity. In other words, the forests of the Northwest were from the start in ideal condition for management; but no time should be wasted in establishing young stands following logging operations, since such negligence will result in depletion of our growing stock and an inevitable future reduction of our annual cut.

CHANGES WROUGHT BY LUMBERING

The lumber industry of the Northwest started in a small way with the settlement of the country. Before 1890 it cannot be said to have made any impression whatever on the forest wealth of the region. Even as late as 1900 homesteaders were slashing and burning up magnificent firs and cedars in land clearing with no idea that the timber would soon be worth far more than cleared land. At about that time timbermen who had nearly completed the removal of the Lake States white pine appear to have discovered the timber possibilities of this region, and there began a period of assemblage of timber holdings into large blocks. This movement stopped the wastage of timber in land-clearing operations.

Simultaneously with the movement toward acquisition of timber holdings by large operators began the expansion of logging and milling operations. Still insignificant in 1899, with a cut of less than two billion board feet of Douglas fir, the cut increased to nearly five billion by 1909, the greater part of the development occurring after 1905.



(Courtesy Clear Lake Lumber Company)

TOPPING THE SPAR TREE

To those who first witness the operation of preparing the spar tree, the sight is a fear-inspiring one, for the "high climber" is often 200 feet in the air and working under most hazardous conditions.

In this development Washington led in the first decade of this century, while Oregon has made great strides in the second decade. Idaho and California have developed their cut at a steady pace throughout the twenty years, but lag behind Washington and Oregon. Timber development to date has only cut over 3,500,000 out of the 28,000,000 acres in the Coast fir region and a lesser area in California and Idaho. Though lumbering operations in themselves have made no great inroads on our northwestern timber supply, the combined results of old and recent fires and lumbering leaves our forests even now only about 60 per cent stocked with old mature timber ready to cut.

If this result has been secured with our lumber industry hardly past its infancy in years, what will happen in its early maturity, which is being hastened by increasing demands from the East; by full equipment of ships and railroads for transport of finished product; by water, rail, and highway transport for raw material; and by huge steam and electric machinery, which is attacking the forest in all but a very few localities in the whole western region? The answer is that these forests once held inexhaustible will melt away before the combined attack with such rapidity the world will hardly realize their passing. Already timberland assessment figures show that some counties in western Washington once entirely



(*Photograph by A. M. Prentiss*)

A GIANT FROM THE FOG BELT

This great spruce log gives some idea of the herculean tasks with which lumbering on the Pacific Coast is confronted in converting its forests into lumber. It also emphasizes Mr. Kirkland's statement, that the virtual exhaustion in other parts of the world of old-growth coniferous forests, yielding high percentages of clear, first-quality lumber, is speeding up forest destruction in the Pacific Northwest.



THE DONKEY AT WORK

(Cress-Dale Photo. Company, Seattle)

In this picture, "ground yarding" is under way—a method of logging in which the donkey-engine and steel cables are used to drag the logs along the ground to the landings on the railroads. Of late years this method has been giving way to the "high-lead" system.

timber-covered count the duration of their remaining mature forests no more than ten to fifteen years. Western Washington has reduced its privately held mature timber to less than 4,000,000 acres, which is melting away at an accelerating pace averaging 120,000 acres a year during the last decade, but which will approach closer to 150,000 acres in 1923. Thus, in 20 to 30 years western Washington will clean up its privately owned old timber. Oregon and California will follow later.

What is the answer? How can human needs continue to be served? There is only one answer: that is continuous forest production. What does this depend upon? Is it the investment of capital? No; it is merely the conservation of capital, sufficient of which is already invested in the forest and should remain there. Is it an investment in operating costs? Only to a minor degree. When the timberland owner has paid his taxes, provided fire protection on his standing timber, and general administration costs, 90 per cent of the cost of continuous production has been met. Forests need only slight added expenditures in betterment of natural reproduction and its protection from fire to secure continuous yield.

NEED OF HUMAN FORESIGHT AND INTELLIGENCE

The greatest need is a change of point of view, which has looked upon the forest as upon the mine, as an inex-

haustible resource, when it should be viewed as a continuous producer of wealth for human use. The business of forestry will then be organized on that basis to make each area produce continuously. Instead of one rough exploitation for lumber, utilizing only 20 to 25 per cent of the tree, continuous yield will bring in its wake the myriad wood-using industries which now characterize the East. These industries can live and thrive forever on the portions of the trees now wasted, and bring returns to capital and labor and the community unthought of with our present rough and wasteful utilization. Mark well, however, that these industries can only be established and thrive where the yield of raw material is continuous and sustained, as in the forest organized for continuous yield.

After all, we come to the question of human intelligence, since that is the fundamental requirement in the kind of forest practice needed today. The white race, starting from Asia thousands of years ago, has been in its successive migrations westward carrying out a process of biological selection. Its restless and pioneering spirits have from each of its stopping places moved on to new fields. Now, as no more migrations are possible, must come the test whether these people, who look upon themselves as the cream of civilization, can change from the

habit of continuous destruction of forest resources, since they have reached the last stand, to conservation and development. It is the acid test of human intelligence and foresight.

THE FUTURE A QUESTION OF HUMAN BEHAVIOR

Assuming that the necessary intelligence and foresight to solve the problem of continuous forest production in this region will be forthcoming, it is worth while to look into the future to see what the probable results of a continuous production policy will bring. The writer has examined this question for the ten to twelve million acres of permanent forest land in western Washington and, without going into the basis of estimates, he believes that, given proper management, these forests should give an annual production forever of approximately six billion feet of saw-timber and six million cords of other forest material. This is about the present annual saw-timber cut in this territory. The cord material, it should be noted, closely approximates the annual consumption of pulpwood for the whole United States. Oregon, California, and Idaho are not cutting up to their possible sustained-yield production. Probably the 1923 production in these four States will be close to fifteen billion feet. There is, in the writer's opinion, a possibility of a sustained yield in these States of twenty billion feet of saw-timber annually, together with vast volumes of material

suitable for fuel, pulp, and paper, and various chemical industries. These yields can never be realized, however, unless proper care of the forests succeeds neglect and indifference. The problem, therefore, in the final analysis, becomes a most interesting one of human behavior. Each observer will watch with hope or despair, according to his view of human character.

FIRE control on the National Forests becomes every year more effective because of the various forms of co-operation obtained, states Colonel William B. Greeley, of the Forest Service. Man-caused fires are still the great hazard and the great problem. The only way, he says, to reduce these fires is to impress the habit of care with fire on the minds of users and visitors on National Forests. In 1921 the total number of man-caused fires was 4,400, yet there is no more reason for the usual man-caused fire on the National Forests than there is for the usual grade-crossing accident.

THE 150,000,000 acres within the National Forests, of wide geographical distribution, embrace in part the natural ranges of every species of wild life known to have existed in the continental United States.

FOREST PROTECTION WEEK



Wahl, in the Fresno Bee

AN OUNCE OF PREVENTION IS THE CHEAPEST

DECLARING that the preservation of our forests is essential to our industrial and commercial life, to our strength as a nation, and to our individual well being, President Harding in a proclamation issued March 5 has designated April 22 to 28, 1923, as "Forest Protection Week." President Harding calls special attention to the fact that forest fires, which are largely due to carelessness and thoughtlessness, are threatening to deplete our forests to a point where they no longer meet the nation's needs of wood, water conservation, and outdoor recreation. He asks that wherever practicable the Governors of the various States make Arbor Day fall within the same week, and he urges "all citizens, teachers, officers of public institutions, commercial and other associations, and the press to unite in thought and effort for the preservation of the nation's forest resources by conducting appropriate exercises and programs and by publishing information pertaining to the waste from forest fires and ways of preventing and reducing such losses, in order that our forests may be conserved for the inestimable service of mankind."

This is the third year that "Forest Protection Week" has been fixed by Presidential Proclamation, and its observance has been of tremendous value in stimulating public thought to the need of forest protection. **AMERICAN FORESTRY** urges its readers to participate in "Forest Protection Week" this year, and to make it another milestone in the preservation of our forests.



"What Do Tourists Want?"

BY ARTHUR H. CARHART

WE are forming a national tourist habit. It may be a bad habit or a good habit. As a general thing, it is a mighty good habit to build up. But there is a real question of just what is good taste in what the tourist seeks.

Many resort-keepers offer a jazz-band accompaniment to scenic splendors that need no jazzing. Thousands are accepting this offering as quite the proper thing. But there is also an army of vacationists who annually spend several weeks in mountains and by lakes who shrink away from the blare of the brass horns and the glare of the tinsel make-believe attractions. The latter type is the true American tourist-traveler.

These people need not accept the offerings of some of the resorts. In fact, they can soon show the resort-keepers that they will not accept such side-show stunts as they now are offering in many places as the real attractions for tourist trade.

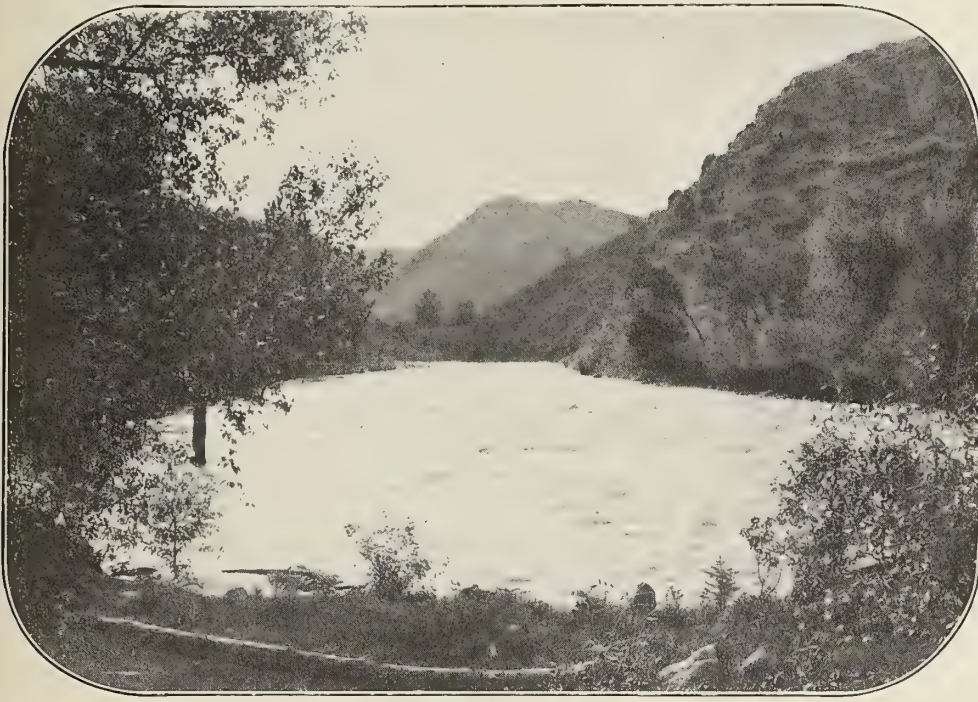
WHO was the first tourist? Was it Noah, when he took his famous trip in the ark? Or was that more of a commercial voyage? Or was Ulysses the original traveler? Maybe the honors should go to some unknown, old-time prince or potentate of prehistoric times who was afflicted with a great desire to see foreign lands and view their scenic splendors and curiosities.

If it were possible to establish the identity of the person who started the tourist business, and then trace the growth of the movement through the many years intervening, it might be possible to analyze the complex mind of the modern tourist, who must have back somewhere in the fiber of his mental make-up some of the heritages from past aeons of time. For after going into the question of what attracts tourists, or more specifically what the commercial interests who cater to tourists' trade offer their customers, the outstanding oddities of these offerings could be explained in no other way than that somewhere back in prehistoric times the human race had ingrained into its make-up a weakness for freaky, bizarre tricks of jugglers, fakirs, and the like; for some of the things offered to the public as attractions in the closest proximity to really scenic natural features are bought outright from side-show equipment houses, and others not so secured have the same tang to them.

In the presence of one of the majestic mountain peaks

of the West lies a resort town almost as well known as the peak. Thousands of tourists come to this place every year. In the past the peak and the canyons around that peak were the things which entertained the tourist who came to that village. Commercialism has run riot in that town, and today there are many of the fakir type of attractions to beguile the traveler who will turn his attention to them. And if he does not turn his head and gaze in wonderment, the showman (for he is nothing else) almost tears his hair and rages because they prefer the peak, the cliffs, and the canyons which God, and not the craftsmen in jugglery, made.

Take a short trip with me here on the printed page through some of the things which greet you as you come to and into this little resort town. Under your car reels the road, a highway that has a hard surface and few ruts. Before you towers the peak. Into your vision flashes a huge sign-board, "Take the trip to the Silver Park, most wonderful trip in the world," you read. That is hardly out of vision when the next sign-board proclaims that you should see the "Ancient Indian Dwellings, most wonderful thing in the world." Now I know that the Indian dwellings of which these are duplicates are miles and miles from this point, and that these buildings were put up around 1910; but you may not know it, and the next fellow will not realize it is a fake unless he is informed. A third sign admonishes you to take the trip over "The



A MOUNTAIN STREAM

God made the hills and streams, and in them is an artistry never equaled by man-made things; yet, by a great outcry and much hubbub and startling advertising, the conjurer turns the tourists' attention away from them to his tawdry wares.

Hopper Mount Railway, the greatest trip in the world," while on the opposite side of the road stands a contradictory electric sign, which declares that you should see "The wonderful Cavern of the Gnomes, most marvelous natural wonder in the world."

By this time, if you have not before seen this place, you are at a point where you realize that if the signs are all true the region is, without question, the most unique, stupendous, awe-inspiring, breath-taking place in the world. But you question if they are true. Mt. Rainier, the Grand Canyon, the Mammoth Cave, and a few other things cannot be here, you know; or, if they are handy and can be seen by taking some short trip with an auto, you feel that the signs and the geographies you studied are at variance.

All this time before you stands the peak which has called you, as many have been called, to view its majesty. The canyons are still there, and you wonder if you take in a few of these advertised show-places just to satisfy the jugglers you can without interference see the peak and the clefts in its sides through which course clear streams.

But between you and the peak stands another world-known geological formation, which is known as the Valley of the Clouds. You decide to see that on the way to the first canyon. The same good highway carrying you by the contradictory signs brings you to the valley gateway. You stand and gaze on the unusualness of the cliffs standing in the air sheer on two sides. Here are no signs, and you find upon asking that it is owned by the citizens of the town and non-commercialized. You thank the thoughtful citizens for that, and again you take to the car and, hearing of a famous rock formation on the way to the canyon you intend to visit, you plan to stop there a moment on

the way; but before you quite reach this place you pass a cabin, or perhaps a tent, over which is a sign which proclaims it the resting place of the "Wonderful Petrified Indian"; and just beyond it a high fence is plastered with the sign "Equilibrium Rock, the most wonderful thing in the world." It is true, the rock is fenced around with a red board fence, and you have to sneak a peep at it through a knot-hole or pay the juggler his fee before you see it.

I could go on and tell you of the auto drivers who almost kidnap you in order to take you on their trips; of the curio shops where they gravely sell you genuine Indian relics, made by the Indians of prehistoric times, that should honestly bear a stamp of "Made in America, 1918"; of the dozens of other cheap and gaudy

things offered visitors to this place in lieu of the peak and its supporting natural beauties—petrified Indians, trips to the most wonderful of all wonders, and other over-advertised trick things in its stead.



THE ROYAL ARCH OF THE LITTLE ST. CHARLES

This arch, carved by Nature out of solid rock, far excels all of the man-made materials offered at times as interesting things for tourists. Such a curio as this, in the San Isabel Forest, can well be the interest point of an entire day's trip.

But people who go there year after year to see the peak become blinded by the dust stirred up by the conjurers, and I venture to guess that the majority go away with just a bit of dissatisfaction over the whole order of things there. They came to see the peak and they saw instead a petrified Indian.

This is no mythical town. It exists and prospers with all of the most wonderful of things in the world, each said to surpass anything in existence. And yearly it is crowded with curious sightseers. A situation like this causes one to question just what the traveler-tourist really wishes to behold when he goes a-tripping; whether it is the sweep and dignity of God's mountains or the tricks of the mountebank.

Miles from this, in one of the most beautiful spots in the West, is a canyon with sides of colors never adequately depicted on painted canvas. The scene is striking and beautiful. On the edge of that canyon stands a hotel of good design and not unlovely in the picture. At peace with the world and drinking in the whole spirit of the scene and atmosphere, I pictured the hostelry as housing brown-skinned men in boots and corduroys, women in riding skirt or riding breeches of khaki, and children, brown as berries from their contact with nature, scampering through its halls in suitable outdoor togs. It was with full confidence of finding my kind there that I entered that hotel; but that was shattered peremptorily. It was dinner-time, and at the door of the dining-room stood a head waiter in a spike-tailed outfit which included a white tie and stiff-bosomed shirt. The guests going in were in tuxedos and dinner dresses and the children were in primly starched dresses and little suits. I got by the head waiter, but received a look which intimated that one contaminated with the wilderness should never profane the sanctity of the dinner place with olive-drab khaki.

And that night, with the moon flooding the canyon and casting trees into bold relief against the dark shadows, a jazz band blared and thumped in the lobby of that inn, and guests in the latest fashionable garb gyrated about the floor in the dance of the city ball-rooms.

These are a bit different, and yet they both are examples of situations which cause one to ask what the traveler is looking for. Is it a bit of the city transplanted into the wilderness? Is it the conventional city life, artificially fostered at the very brink of the whole world of outdoors? Is it the trickery and jugglery of the conjurers and misrepresenting advertisers? If it is the former, then why profane the wilderness with it all? Why not keep it in the confines of man-made towns? And if it is the latter, then why come to the mountains or lakes to see it all? There are carnival companies, Coney Island-like amusement parks in all cities, and

all of the trickery of the juggler can be seen there without the tiresomeness of the trip to the mountain lands and the cost of travel, lodging, and food.

In contrast to this, the night before the gauntlet was run by the full-dress waiter at the canyon hotel, I sat by a campfire whose thin smoke coursed to the tops of the tall spruce which surrounded a little park in which were pitched several white tents. In the near distance sounded the tinkle of a horse-bell. The host sat and smoked his pipe, while we chattered of the trip he would start on the following morning.

This head of the party was a gentleman from New York City with sufficient means at his command to go anywhere he wished and secure accommodations such as he desired. But he had a true love for the wilderness, and on the morrow his pack-train would start into the interior of a country which is rarely traveled

by the routine tourist. With him were his wife and their two children, a boy and a girl, and a lady, a friend of his wife.

Many times since have I met these people, who could have spent the entire summer in the more citified hotels and could, if they had wished, bought several petrified Indians, going back into the quiet country, where the moan of the jazzified saxophone never penetrates. They do not endure hardships which tax strength or nerve, but drift along through the wild places, becoming at the moment a part of the region in which they live.

Undoubtedly, no small part of the jazz offerings of



A CANYON OF THE ROCKIES

Such scenic values as these await the traveler in many mountain locations, and if he is a true nature-lover and that love is constant, resisting all appeals of the fakir fraternity, he will seek the scenic locations that constitute the real appeal of the outdoors.

the hotel and the most wonderful trips by the little resort place are resented by the people there, and consciously or unconsciously they wish for the true wilderness and outdoor spirit.

In the little resort town the peak should never have been supplanted by the hurdy-gurdy man-made attractions, better termed detractions. In the great hotel on the edge of the canyon the spirit of the outdoors should have ruled, even in the music of the orchestra. The stiff-bosomed waiter typified what was wrong. The management were putting up city standards in the wilderness. How ill-advised such artificial smothering of natural tendencies for adoption of simple outdoor conventions and standards!

Tourists are of many classes, and it may be that it is necessary to have some places where the devotee of the jazz or the seeker after the legerdemain of the conjurer can find what they seek; but the great majority of those Americans who come to the vacation lands come in the hope of receiving, not a thrill from the viewing of the papier-mâché would-be corpse of an alleged petrified Indian, but a real thrill, that has no morbidity about it, from the chaste beauty of snow-capped mountains. They seek manifestations of the power of the Deity in the ranges of the hills, in the placid surfaces of the broad lakes, and in the deep shadow-lands of the forests.

It is right that the traveler should have his way cleared of the artificial and gaudy, so he can come to the mountain lands without the jarring note of poor taste in hotel or resort management.

A national recreation habit is being formed. Not a little of what the future American will seek in the wilderness depends on what this generation accepts as standard. If the tourist quests of our ancestors really gave us as a people an appetite for the side-show attractions which many modern resorts offer, it is, perhaps, hopeless to think of giving the next generation much else than these same things, for other institutions could not thrive; but the presence of myriads of people who are being driven

away from the "bright-light" festivities of the metropolitan hotels of the wilderness tells a much different story. Their appreciation of the world is based on the words of the Psalmist; for them the "Heavens declare the glory of God, and the firmament showeth His handiwork."

This whole discussion comes down to the question of "Do the tourists get what they want when they are invited to view the remains of the paper Indian or to dance to the strains of a modern dance orchestra, while a hun-

dred steps away moonlight floods scenes of transcendent beauty?" After studying the dissatisfied travelers who stay at these places because they know no other place to hide away, and the ones who know where to go to find untroubled nature, one is strongly convinced that the answer is in the negative. The people really want to get into the uncontaminated out-of-doors and lead a really natural outdoor life, but are prevented by the hurdy-gurdy mind of a minority and the shortsightedness of the commercial men who offer the sedative of jazz to the always-heard-from, bright-light maniac.

If the national recreation habit is to offer to the nation and its individuals the greatest good, the outdoors must dominate in recreation centers; manners must be simple. The mountain peak must be the real attraction, undimmed by local side-show monstrosities. Vacations will then bring to the traveler real inspiration, love of country, a genuine appreciation of nature, and a joy in being a part of the world.

What do tourists want? Most of them want to play, rest, study, and be inspired in the forests, mountains, canyons, and lake lands. They seek communion with nature. And if they are to get it, every one so minded must express his disapproval of the amusement-park type of developments in the environs of the great outdoors. The side-show offerings of resort places are forced on the public by a minority and by commercialists. True types of development will quickly come when true lovers of nature insist. And now, for the love of all outdoors, is the time to condemn tourist attractions of the hurdy-gurdy type.



A FINE AUTO ROAD FOR THE TOURIST

Rushing mountain streams, massive peaks, sheer canyon walls, and dim forest vistas are the real attractions for the average tourist. It is these natural features they seek, and if natural scenes were as much advertised as the other less meritorious features, those who take care of the tourist trade would find their customers much better satisfied when "sold" the scenery than they now are when sold "hurdy-gurdy" types of wares.

A Trip for the Hardy

By Boat, On Foot, and
By Auto

IN THE SISKIYOU NATIONAL FOREST

A NOVEL trip from Gold Beach to Grants Pass, Oregon, can be taken through the Siskiyou Forest. Three types of transportation are utilized. It is a trip only for hardy hikers.

First Day—Gold Beach to Agness by gasoline launch, on the Rogue River. Gold Beach is locally famous as a seaside resort.

Second Day—Agness to Illahe, seven miles, on foot. Trail follows the Rogue River. One must carry light back-pack from Agness, with small shelter tent and light camp equipment.

Third Day—Illahe to Billings, a long sixteen miles. By dividing the day in half and taking eight miles to the half day, this can be made by a good hiker without fatigue. Camp must be made at Billings unless local ranchers will accommodate you.

Fourth Day—Billings to Eden Valley, a trip of eight miles. An extra day at Eden allows a visit to the top of Mt. Bolivar, where is located a Forest Service lookout.

Fifth Day—Eden Valley to Marial, a hike of twelve miles. At Marial, three miles from the Rogue River, it is 1,500 feet above the water level.

Sixth Day—Marial to Horseshoe Bend. Nine miles through forest lands and partially following the river.

Seventh Day—Horseshoe Bend to Almeda, a long



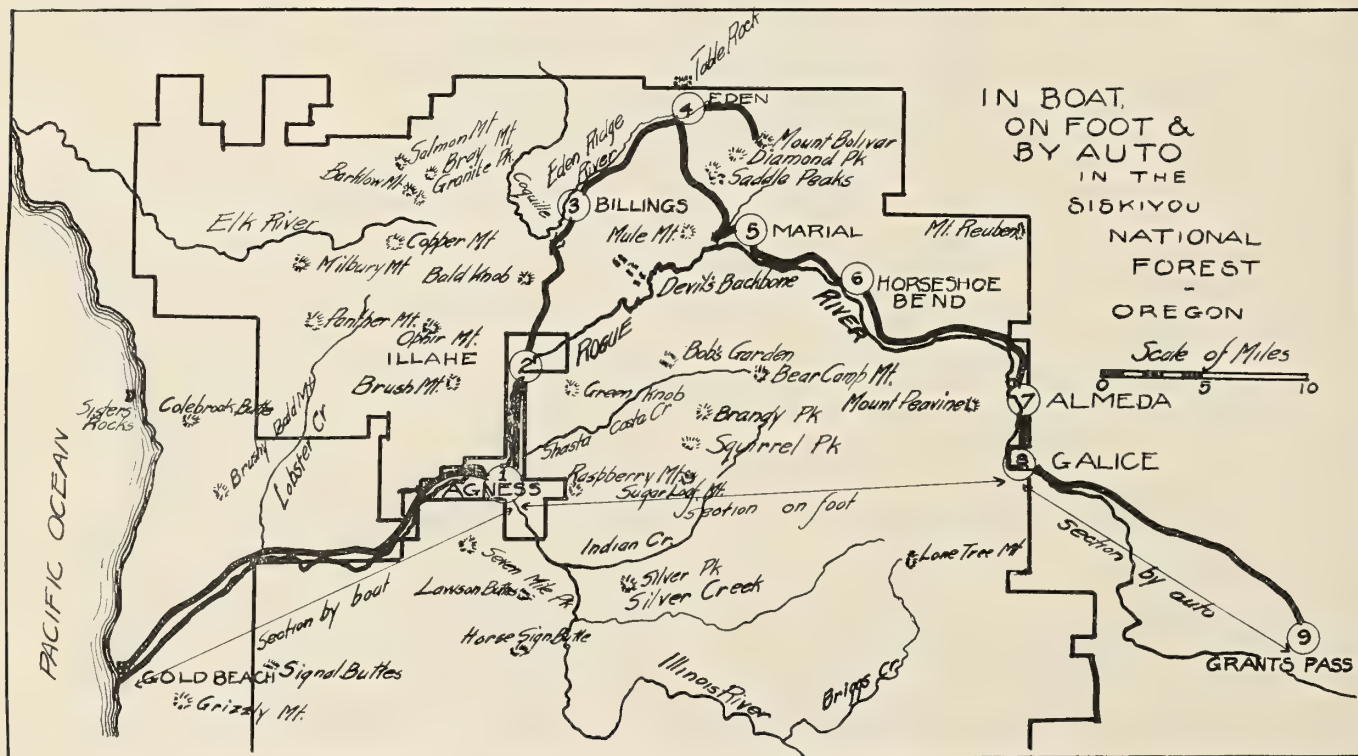
THE ROGUE RIVER CANYON

The Rogue River, long famed because of the great luscious apples which come from its upper reaches, presents in this scene conclusive evidence that it has another reason for pride, in the scenic features of which it may boast.

seventeen miles. Must pitch camp at Almeda. Near the canyon of the Rogue.

Eighth Day—Almeda to Galice, only four miles after the long hike of the day before. The last section of the hiking.

Ninth Day—Galice to Grants Pass, 24 miles by auto stage. For further information write Forest Supervisor, Grants Pass, Oregon.



The Paraná Pine of Brazil

By S. J. RECORD

THE Paraná pine is a tree of the first importance in southern Brazil, where it occurs over an area of approximately 100,000 square miles. It is roughly estimated that there is at least 200 billion board feet of timber on this area, of which about one-fourth is within reach of the present lines of transportation. One lumber company has under its control about six billion of the

a thick growth of hardwoods of many different kinds, a few of which are valuable for their lumber.

The wood of Paraná pine is moderately hard, heavy and strong, free from resin, and is of a uniform texture—that is, there are no distinct bands of hard and soft wood, such as characterize our hard pines. The sap wood is nearly colorless, but the heart exhibits various shades of brown, and parts of it may be bright red. The wood is easy to work and makes excellent material for general construction.

Five Million Dollars from National Forests

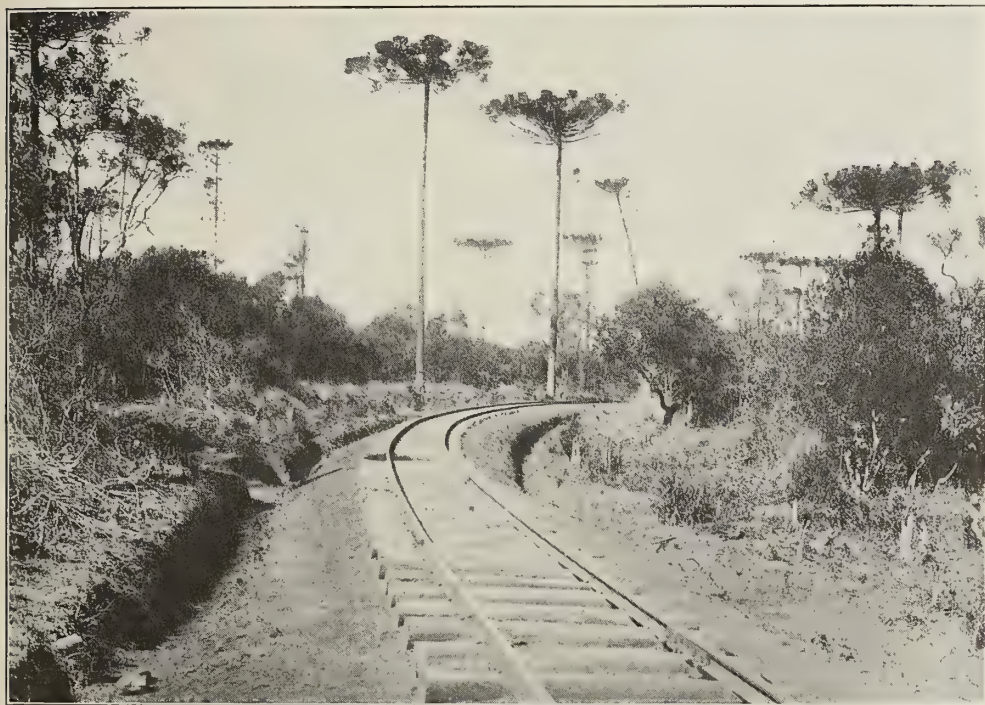
Revenue amounting to \$5,068,527.42 was paid into the United States Treasury from the National Forests during the last fiscal year. Receipts for the last quarter were far in excess of those for any preceding quarter in the administration of the National Forests except one in 1920.

Nearly four and a half million of these receipts are derived from the use of timber and forage, the remainder for the use of land, including water-power sites.

Income-producing business on the National Forests showed remarkable stability, the report continues, in view of the depressed or uncertain conditions in the timber and live-stock industries of the West, which afford the principal markets for National Forest products. The abnormally low output of western sawmills, which caused a decrease in receipts from timber sales for the preceding year, continued until the last quarter of the fiscal year 1922; but for that quarter they exceeded \$620,000 and for the entire year they totaled \$1,780,347.24 and were almost identical with those of 1921.

Approximately 22 per cent of the cattle and 53 per cent of the sheep in the 11 Western States are grazed upon National Forest ranges during part or all of the year. The grazing business of the Forests consequently reflects closely the conditions in the live-stock industry of the West, which has been passing through one of the most severe financial depressions of its history.

Twenty-five per cent of all National Forest receipts are given to counties in which they lie, to be used for schools and roads.



PARANÁ PINES WITH TALL, STRAIGHT STEMS BEARING CLUSTERS OF LIMBS UPTURNED LIKE GIANT CANDELABRA

timber, which averages 8,000 board feet to the acre over the whole tract, or about 12,000 feet, excluding the blanks in the forest. Some stands will run as high as 25,000 feet to the acre.

In 1913 the estimated output of Paraná pine lumber was about 60 million feet. The difficulty of getting our southern yellow pine during the war stimulated the cut of native timber, and the output of Paraná pine was nearly trebled. It is capable of much greater expansion, but the need for coniferous lumber in South America is so large that Paraná pine will probably never enter the world's markets to any great extent.

The visitor to the Paraná pine forests finds many differences from the pine forests of our own country. In the first place, the Paraná pine is not a real pine at all, but a species of *Araucaria* of very ancient lineage. The mature trees are from 80 to 120 feet tall, with straight stems bearing at the top clusters of limbs upturned and tufted at the ends, giving the effect of giant candelabra. In the forests, which are not open and park-like as so many of our pine forests are, the *Araucarias* tower above

Seating the Nation

By OVID M. BUTLER

AMONG the many extravagant customs of the American people is the hopelessly incurable one of sitting down. Just how much of our normal expectancy is spent seated in a chair, even the insurance companies have not yet dared to reckon; but one does not have to resort to the law of averages and a carload of lead pencils to come speedily to the conclusion that the task of seating the nation is no small undertaking.

As bearing upon this problem, not lightly, but with the solemn accuracy of science, the Forest Products Laboratory at Madison, Wisconsin, has just completed a report on the chair industries of the United States, which should make us all straighten out our rounding spines and give thought to what our chairs are costing us in terms of forest waste. To the casual observer, the amount of wood in the average chair appears too insignificant to be a factor in our wood lexicon, but when we consider that there are one hundred ten million people in the nation, one-half or better of whom are occupying chairs most of the day, and the other half or less are demanding chairs when

and where they want them, the amount of wood required to meet our national sitting proclivities begins to take on real proportions.

The Laboratory report, which has been prepared by Arthur T. Upson and Arnold O. Benson, goes deeply into chairs and the use of small-dimension lumber in their manufacture. It is based upon the investigation of a corps of men who spent eighteen months in different chair factories, making there careful studies of manufacturing methods and wood utilization. While the report is in the nature of the first chapter of a more extensive investigation, which will extend into other industries using small-sized lumber, it nevertheless throws such illuminating light upon present methods of converting forests into chairs as to warrant the prediction that its findings may revolutionize some of our old-time customs of forest utilization.

There are some one hundred sixty-five factories in the United States, we are told, which are making chairs of

standard type and pattern. These factories use annually 320,000,000 feet of wood—enough lumber to build 130,000 houses—and they manufacture some 2,000,000 dozens of chairs—a number which, placed in a single row, would reach from New York to San Francisco and then back to Chicago. Twenty-seven different species of trees are used, oak forming 40 per cent of the total consumption, beech, birch, and maple 28 per cent, and gum 16 per cent.

As almost everybody must have observed, the manufacture of a chair does not require large pieces of wood. All its wood parts are of small dimensions, as illustrated by the accompanying photograph. These parts range in size from pieces as small as five-eighths of an inch square

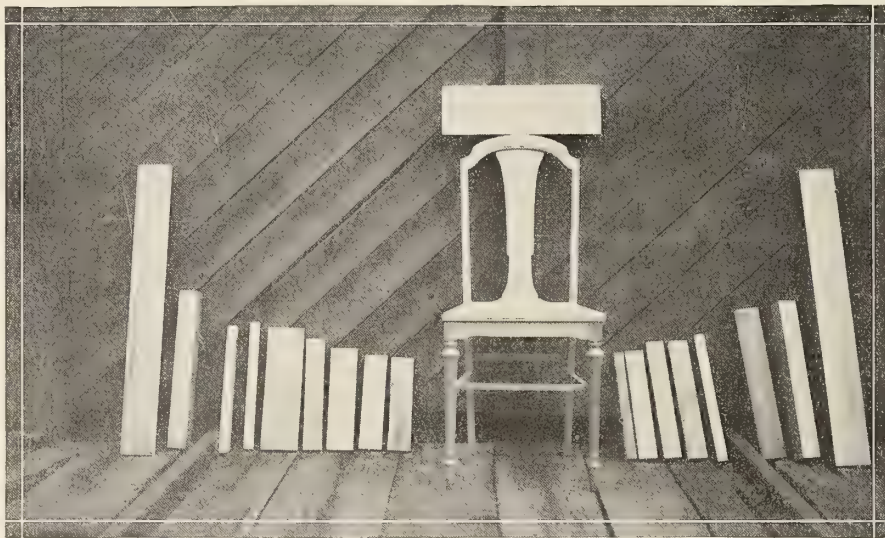
and six inches long, in baby's chair, to pieces six inches wide and twenty-four inches long, in grandfather's chair. If one were to run the gauntlet of chair parts, the report tells us, he would find twenty-six hundred sizes of small dimensions, in standard types alone—a fact of no small importance in creating wood waste.

But the amount of wood actually in our chairs is not so important as the

amount which does not get into them, but is wasted between the forest and the finishing end, in the chair factory.

CUSTOM HOLDS WHIP HAND

It is here that the Laboratory's report uncovers a living tomb of forest waste, dating back to our halcyon days of forest plenty. Custom, holding the whip hand, has ordained that the most practical and logical form in which manufacturers of chairs and other small wood products shall obtain their raw wood is as lumber or large-dimension stock from the sawmills. For years most of the chair factories located in States often hundreds of miles distant from the sawmill have been hauling their raw material in commercial lumber sizes to the city, remanufacturing it into small chair parts, and paying freight on the portion wasted as well as the portion used. This waste from high-priced lumber they burned as fuel and thought they were getting off about even. In the days when the forest was literally in the back yard of the chair factory



THE LOG OF A CHAIR

From tree to lumber; from lumber to small cuttings; from small cuttings to finished chair. Lost en route 50 per cent of the original lumber. These small chair parts can be produced at the sawmill from material now wasted, thus effecting a double saving in conserving our wood supply.

and freight rates were moderate, the cost was insignificant; but today, when the chair factory in Michigan or Massachusetts, for example, has to go to Mississippi or Arkansas for its raw wood, it is a different story. That is one chamber of the tomb. The second, or inner chamber, is at the sawmill end. The larger the dimensions of lumber standards into which a log is sawed, the greater the percentage of the log which goes into the slab pile and is burned as waste; also the greater the number of small logs left in the woods to rot. In this connection, the following paragraph from the Laboratory report is most significant:

"Many loggers and millmen, though familiar with the wood losses occurring in their own operations, are not fully aware of the magnitude of the low grade and wood-waste problem throughout the country as a whole, or its relation to the critical conditions now existing with respect to the nation's timber resources. This appalling ineffective utilization of wood can best be illustrated in the following way: Forest Service studies show that but 30 per cent of the wood in the original forest is represented by seasoned, unplanned lumber, the product of the sawmill. In other words, for every 300 board feet of lumber manufactured, 700 feet are lost or wasted in the woods in the form of logs, or at the sawmill in the form of heavy slabs and edgings, long trimmings, and low and 'off' grades of lumber."

INDUSTRIAL SUICIDE BY SHORTEST ROUTE

On the theory that our forests are disappearing four times faster than they are being replaced by growth, this situation is nothing short of industrial suicide by the shortest route, and the Laboratory set out to apply the measuring rod to the waste—in wood and money—occurring in the manufacture of small-dimension stock from high grades of commercial lumber. Instead of buying this high-grade lumber and paying freight on knots, rotten wood, sawdust, and off cuttings, they reasoned: "Why not utilize for the production of small-dimension wood the wood now being sent to the waste-burners at the sawmills and fed to the wood-consuming fungi in the forest?"

"Fine; we're for it!" said one group of manufacturers.

"Nothing to it! Impracticable! It does not conform to custom," said another group, the old-school men.

"Well, let's check up, anyway, and see what there is to it," rejoined the progressives; and so with the encouragement and moral co-operation of the Association of Wood-Using Industries, the Laboratory has checked up on the chair industry and in the first inning scores as follows:

Into the manufacture of wood articles we put about ten billion feet of lumber annually, but in getting that ten billion feet into use we drain our growing forests to the extent of some thirty billion feet.

WASTING 50 PER CENT AND MORE

The chair and furniture industries, two of the most important hardwood industries in the United States, are today feeling the pressure brought through the diminishing

hardwood supply. Cost of raw wood is increasing, quality is decreasing, and hence waste is on the up-grade.

The practice of buying commercial grades of lumber at the sawmill, hauling it to the chair factory, and there remanufacturing it into small chair stock is wasteful, expensive, and uneconomic. It increases the amount of raw material required by 50 per cent and the final



THE HIGH COST OF FUEL

Wood waste at a chair factory, used as fuel and derived from lumber costing \$75 a thousand feet. This waste is unnecessary; besides, as fuel, it costs the chair manufacturer six to ten times the cost of coal, even at present coal prices.

dimension cutting cost one and a half to two times the original market price of the lumber at the mill. The waste of material alone in remanufacture may amount to as high as 56 per cent, which, on lumber costing \$80, means a net loss to the manufacturer of \$33 a thousand feet. Waste in band-sawing curved chair parts runs from 33 to 52 per cent and, including waste at the cut-off saw, it sometimes runs as high as 60 per cent.

Under the present practice, one-third of all expense for freight is on material which is wasted at the factory in the dimension-cutting processes. Manufacturers who think they are atoning for this waste by utilizing it for fuel are mistaken, since the fuel value of this waste is seldom over one-sixth of the cost of the lumber.

The total cost of small-dimension stock produced from lumber at the factory exceeds the cost of the original lumber by from 12 to 164 per cent. Inefficient methods of yarding, handling, air-seasoning, and kiln-drying lumber, as generally followed in the chair industry, are contributory causes of increased waste in factory cut-up operations.

Wood manufacturers are not fully aware of the amount

[Continued on page 244]

Trail's End and Beyond

BY THEODORE SHOEMAKER

Photographs by Asabel Curtis

ON a day in early September, 1922, we set out from Seeley Lake with pack-train, camp equipage, and food for an exploring trip into the unexplored interior of the Flathead National Forest, in northwestern Montana. It was a glorious morning, the lakes and mountain slopes were flooded with sunlight, and the tinkle of bells and creak of saddle leather, as we moved up the trail, were like sweetest music, for we were off at last on our long-anticipated trip into a country which our maps showed blank. No one knew what that country held. We were going to find out. Our enthusiasm was so keen as to be childlike, although the eldest of our party was seventy.

We were of the many to whom the untracked wilderness holds an irresistible attraction. Already we felt the charm of treading where no



Holland Lake, looking across the valley to the wilderness of peaks and glaciers of the Mission Range. "Trail's End" is just one day from here.

*Where the Mission Range of the Rockies Locks Its Splendor
in Rugged Isolation*



Glacier Creek, tumbling down the east slope from a thousand sources, among fields of perpetual ice, drains the glacier lakes above. This is "Trail's End"—our first camp above Holland Lake.

human foot had trod, where no sign of human intrusion could be found to cheapen or defile, where things are still just as Nature made them. There is a thrill and a gratification to climbing unnamed and uncharted peaks and standing on their summits find there no monument to previous human conquest. It means much to be the first to do a thing, to be among the hardy-spirited few who attain what others have not attained. It is the spirit of discovery still living in us after we are by way of having no place left to discover or subdue.

We hoped this would be one of those rare journeys where we could gratify that elemental part of our natures by a first discovery of things and places. We were not disappointed. We came back feeling that our hopes had been more than realized, for had we not taken horses through



Nearing the end of the trail up to the far places, urged on by the lure of an unexplored country.

seemingly insurmountable jungles and slides and across the bare face of a mountain set on edge, miles beyond where horses had ever been, to make our camp in the heart of the most wildly beautiful country that lies out of doors? Had we not spent a week in the grandeur of an environment where no human, unless perchance some lone prospector of the early days, had ever been? Ours certainly would be the first maps and photographs and writings to portray this wonderful region.

There are not many such places left within the habitable portions of the earth, and people are coming more and more to appreciate the lure of them and to give them a value on account of their very remoteness. In the United States they are mostly to be found in the mountain regions of the West, and it was in recognition of this fact, as well as of the great number of people to whom they appeal, that the railroad companies last year set out to get photographs and motion pictures to be used in advertising this feature of the Northwest.

Our party was the outgrowth of a proposal for such an expedition made by the Northern Pacific Railroad. It had been rumored that far beyond the upper reaches of the Forest Service trails, among the glaciers of the Mission Mountains, was a country which, could we but reach it, would afford landscapes and settings for the finest scenic pictures ever made, and descriptive material to inspire the pen of an Evarts or an Atwood. In the party were O. D. Wheeler, venerable author of "The Trails of Lewis and Clark" and other works; Asahel Curtis, of Seattle, whose outdoor pictures are

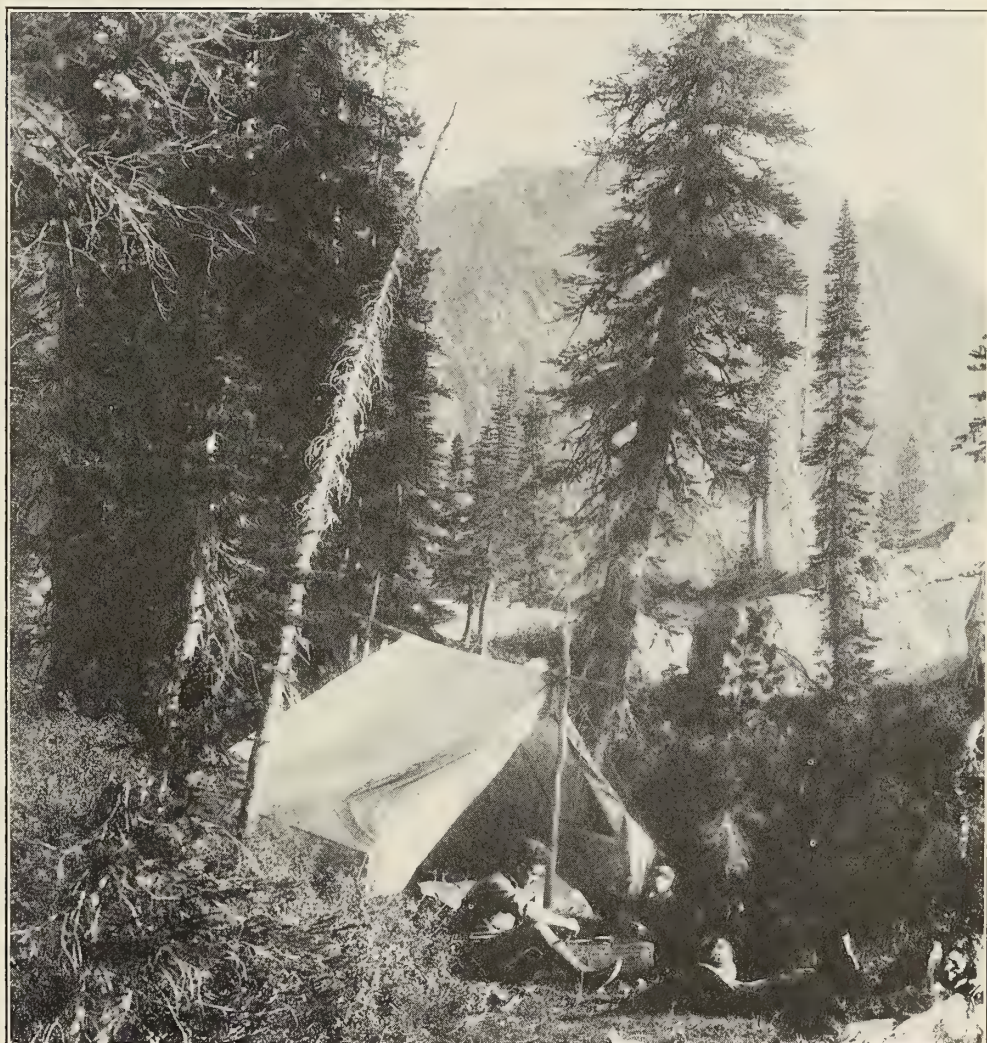
without rival; Messrs. Bell and Foss, motion-picture artists of St. Paul; Jack Clack and the writer, from the Forest Service at Missoula; and a cook. Our equipment and impedimenta included seventeen head of horses, seven riding and ten pack saddles, mess outfit, tents, bedding, cameras, and one hundred rations.

The country which we proposed to explore lies some eighty miles northeast of Missoula and about an equal distance south of Glacier National Park or from the nearest stations on either the Northern Pacific, Milwaukee, or Great Northern railroads. It is traversed by two parallel mountain ranges, the Mission and the Swan, whose contiguous slopes drain into the Swan River, which flows northward and empties directly into Flathead Lake.

Our main objective was the head of Glacier Creek, which tumbles down the east slope of the Mission Range from a thousand sources among fields of perpetual ice, dropping from lake to lake by a series of waterfalls of unbelievable beauty and variety, until it finally emerges from the lowest lake into miles of deep, dense forests. It is truly a marvelous stream. Ten miles from its source it is 50 feet

in width, and even at low water in September was flowing swiftly at a depth of two feet.

From our first camp at Holland Lake, at the foot of the Swan Range, we gazed across the valley and up at the wilderness of peaks and glaciers of the Missions and wondered whether we could penetrate them. Our maps were silent about this country, with all its striking features. Inquiries among the local inhabitants of the valley gained us no information beyond the fact that a trail led up to the lower one of an indeterminate number of lakes which feed the stream, and that above the end of the trail was a jungle of underbrush, cliffs, slide rock, and bare glacier-polished slopes which would bar all progress. But we were un-



Lagoon Lake, where we made our final camp, in the very heart of the most interesting country we had ever seen.



The land of the waterfalls, where water of the purest crystal, churned to snowy white, takes on the most exquisite colors—an amethyst spray falling into a pool of emerald.

daunted. After a few days at Holland Lake and on the Swan Range, where some fine pictures were secured, we moved camp up to Glacier Creek.

Our first camp was three miles below the lower lake, as grass for our stock could not be had farther up. Early the next morning, with our cameras on our backs, we set out on foot into the unknown. At 2 o'clock, after hours of arduous climbing, fighting underbrush, working around cliffs, and across great fields of giant boulders, we came into the land of waterfalls, and later to the second and third lakes. But still above us and beyond our reach for that day lay the glaciers. All about us, though, was plenty to shoot at, and, tired as they were, the camera men worked for plates and footage till the light became too dim; then we began wearily the return to camp. Clack and Curtis, scouting for a possible horse trail, left us. They found fair going and reached camp at dark. Later, we worked our way, with all our horses and equipment, up over practically the route they found that day.

For some time after they left we continued with the motion-picture camera, shooting the waterfalls as long as there was a chance of results, because, remembering what lay between us and camp, we doubted whether we should ever get back there again. That return trip is a story of its own. At least it is engraved on the minds of us who made it. We decided on the most direct route, and after floundering wearily through brush, letting ourselves down from cliffs, fighting bogs and down timber for what seemed hours, we came once more to the end of the trail. It was now dark and

we sank down and rested a long time, and smoked, considering whether to spend the night there on the ground without food or blankets. Deciding against that, we at last struggled on toward camp, stumbling and falling, wading streams, losing the trail and each other in the blackness, lying on the ground for rest and even snatches of sleep now and then, feeling our way with our feet, stumbling blindly, and finally taking the last creek crossing on a down log on hands and knees, we reached camp at midnight and stole into bed too tired to eat.

But we had seen the promised land, and it contained even more than we had hoped to find. The day's efforts, strenuous as they had been, had yielded but little in pictures, and none of us had the heart to try that trip again. Besides, the best of it lay still farther back—entirely beyond our



A land of pictures indeed—trees, waters, mountains—just as nature left them, untouched and undefiled by man. And here, in rugged splendor, stands a veteran of many battles with mighty winds, on the far-flung timber line.



Clear on the summit of the Missions, with glaciers hanging over one edge and the other side fringed with trees, we found this Lake of the Clouds, and so named it because cloud ghosts seemed always moving just beneath its surface.

reach. Success depended on placing camp right in the country we wanted to photograph, and there was but one place suitable. In a little basin higher up and to the north of Turquoise Lake, Curtis and Clack had come upon a smaller lake, which had near its outlet an ideal camping spot. Round about this basin and on the ledges accessible to it was grass to last our stock a week or more. They believed we could work out a way up the ridge north of the first lake; along it to the base of the steep polished-rock slope; thence across the face of this slope on ledges of varying width; finally into the coveted basin. It sounded easy as we talked over the plan—in fact, the undertaking enticed us. What if our proposed camp did lie miles beyond the trail's end and thousands of feet higher up? What mattered it if we must detour, and switch back, and take reverse



Glacier Peaks, in a Frame of Wind-driven Pine, Rise Splendid and Alone—the Highest Point in This Hitherto Unexplored Land of the Northern Rockies



The Peace of Quiet Waters—Holland Lake, Nature's Mirror, at the Foot of the Swan Range, Bordered by Dense Spruce Forests

grades that would double both the distance and elevation to be overcome? What if the way was barred by those forests strewn with down timber, and by underbrush and cliffs and slide rock? Were we not seeking adventure as well as pictures, and had we not purposely set out to find and explore just this kind of country? We were and we had, and, admitting our ability to put the job through, we set about it with determination.

Starting where the trail ends, we blazed lightly, picking the way easiest to clear until we made sure we could actually make it

through within our time and with the man-power and equipment on hand. Every rod of the way was studied from the standpoint of footing for horses and room to crowd the packs through between trees and rocks. From ledge to ledge across the bare slope the footing sometimes looked precarious, but we decided the horses could scramble up, or if at the worst one should fall, he would not go over and be entirely lost. Brush and down trees too high for a horse to jump were removed, and trees were cut out to make a way just wide enough to let a horse with pack through. There were no refinements to the trail, but it was plainly marked. It was here that Clack's experience proved invaluable, and the fact that we took seventeen head of horses up and down without serious mishap is proof of his mountaineering skill.



Impressive and remarkable glaciated rock formations abound, showing the paths of ancient glaciers through solid rock.



Because it looked like nothing so much as a great mass of turquoise stone melted and run into its basin by the heat of some hidden fire, we named this largest of the upper lakes "Turquoise Lake."

Having brought up additional supplies from our cache at Holland Lake and having the trail cleared and marked, the fifth day from the memorable one on which we first entered Turquoise Basin, as we later named it, found us toiling laboriously up the new trail, and that evening found us cosily encamped at Lagoon Lake, in the very heart of the most interesting country we had ever seen. The tinkle of horse bells was again like music, as it floated to us across the lake, for it meant a real accomplishment and certain success in our undertaking. We were exultant and happy. Here we could track the ancient glaciers to their sources and walk for miles across fields of ice that still hang about the highest peaks.

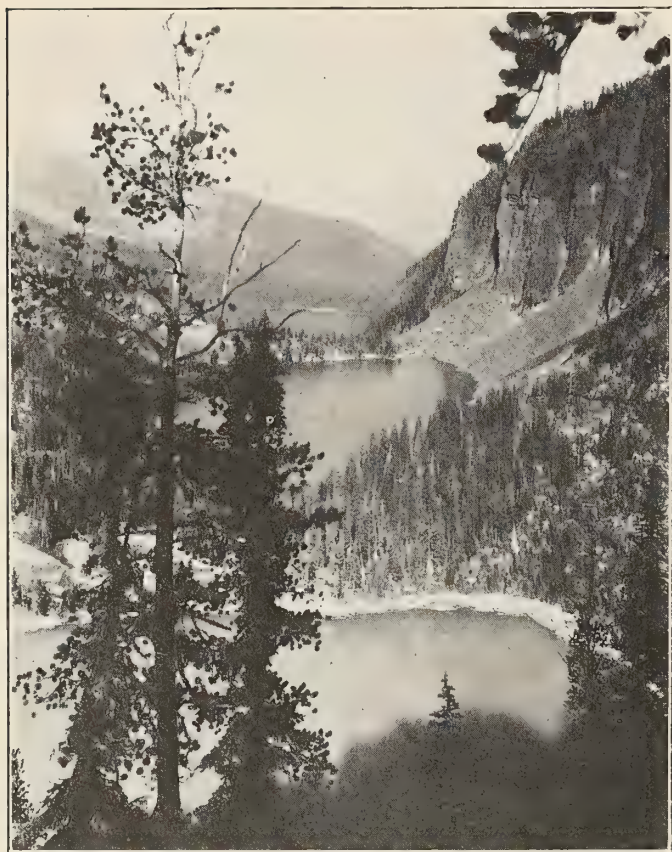
Waterfalls in profusion, lakes of every hue from deep green to purest turquoise, and carrying beneath their surfaces pictures as perfect as those

that looked directly at us from their opposite shores—lakes which seemed literally hanging from cliffs or hidden away on ridge tops and benches—were continually surprising us. The largest of these lakes, some three miles in length, did not look like water, but like a great mass of turquoise stone melted and run into its basin by the heat of some hidden fire. It is shown on our map as Turquoise Lake. No one could think of calling it anything else.

Clear on the summit of the Missions lies another pool of glorious crystal, with glaciers hanging over one edge and, curiously enough, fringed with trees on the other. Cloud ghosts seemed always moving down beneath its surface; so we called it "Lake of the Clouds." Every morning the sun glints from the big glacier which hangs under Glacier Peaks long



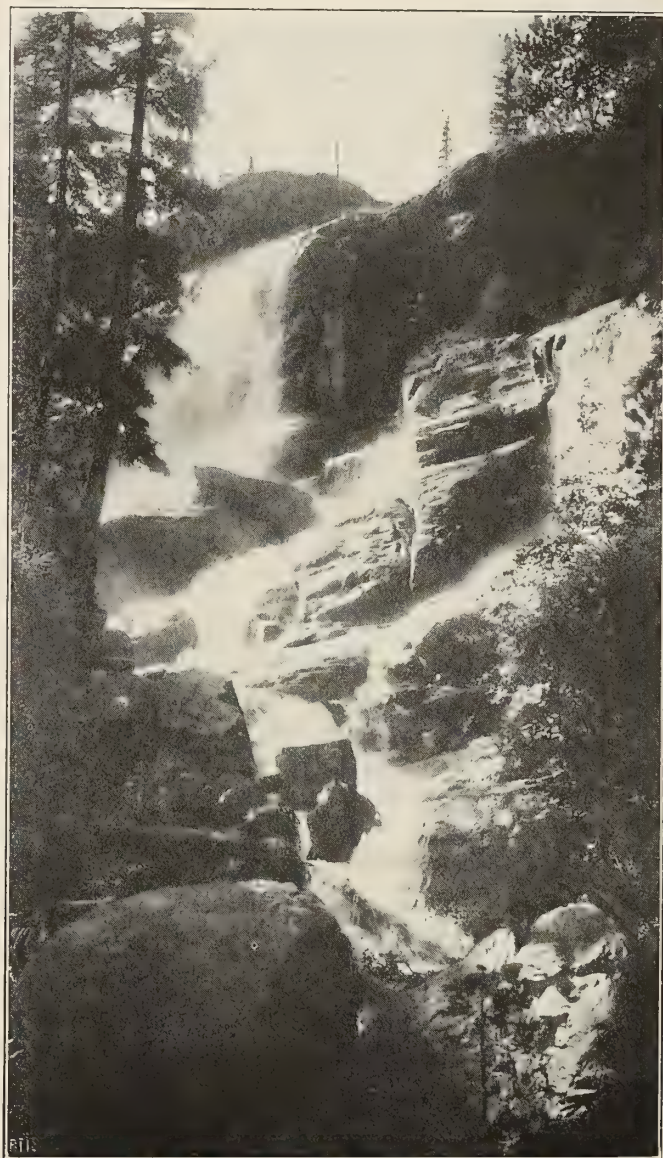
Tree-fringed and exquisite, surrounded by rugged peaks and glaciated rock, lies Lake Louise, with blue-green waters reflecting the delicate tracery which inspired its name.



Glacial lakes of every hue from deep green to purest turquoise, and waterfalls in profusion abound in this land of surpassing beauty.

before it shines on the lower points, and so we called it "Sunrise Glacier." Likewise the sun shone last at night and painted strange colors on the peak which towered down on us from across the lake, and we named it "Daughter of the Sun." So it went. We found a "Heart Lake" and "Island Lake," a "Mirage Lake" and a "Surprise Lake." Things seemed to have named themselves and needed only that we should find them and record them.

The week we had here was all too short, and we left not knowing which were the greater wrong—to have such glories of landscape continue to lie unseen and unappreciated or to do what we should doubtless be called on to do, expose them to the eyes of a curious world, thus robbing them of the charm of their splendid isolation.





EDITORIAL



RAW MATERIALS OF THE CHASE

WILL golf replace hunting and fishing as our best-beloved sport? Where too many people are herded together, where wild land and, with it, wild life disappear, men who have not yet been entirely tamed to the swivel chair are lucky to get an odd patch of land for golf or tennis. But though golf and tennis have their valued place, they never will wholly cool our love of the hills and forests. Too many thousand generations of hunters are back of us. Golf and tennis are the sophisticated counterparts of subways and apartment-houses; hunting and fishing are almost instincts.

So hunters ought to do more than their share in saving their forests—the raw material of the chase. The one greatest enemy of the forest is fire, almost the inevitable ally of destructive lumbering and too often of hunting and camping. Not that every forest fire kills game or destroys the food and coverts of game. But by and large fire is the chief agent that has destroyed our forests—man-set, needless fires. And forests are the haunt and refuge of our best game. Fire often destroys full-fledged forests; but, what in the long run is worse, it almost always kills the young generation of trees, the hope of future forests.

So when a hunter breaks camp and leaves his camp fire burning, or on a hillside stalking deer drops his cigarette

in dry leaves, he may not ruin his next year's hunting, but he is adding one more to the forest fires that are destroying our future forests, and with them the very possibility of having big game.

Two main causes are responsible for the tragic depletion of our game: failure to save and protect a breeding stock, and failure to preserve the breeding grounds and the haunts of game animals. If to the almost irreparable damage already done is to be added an ever more furious destruction of our forests, then the sons of the men who have subdued a continent will feed their manly virtues on golf and clay pigeons, on jazz and bootleg; and the sport that has always lured men like Daniel Boone and Theodore Roosevelt to the forests and the mountains will pass out.

Sportsmen need to take a more active hand in the job of forest preservation. They ought, of course, to be above suspicion in the matter of personal carelessness with fire in the woods. But, what is much more important, they ought to lend a powerful, united, and active reinforcement to those who are fighting the destruction of our forests by fire and ax. Here is a job where help is needed and where in helping others sportsmen will help themselves.

SEEKING OUT FOREST WASTE

WE HAVE yet far to go in curing forest waste. In the chair industry the Forest Products Laboratory at Madison, Wisconsin, has just found that of the raw wood purchased for chair parts, 50 per cent or more is wasted. Chair factories buy their raw wood in the form of commercial grades of lumber. They pay grade prices for it. They haul it from the sawmills to their furniture factories, saw it up into small pieces, salvage an average of 50 per cent of their original purchase and burn the other 50 per cent as fuel. High-priced lumber, mind you, and high freight charges for hauling! One-third of the freight bill is for material lost at the factory.

But that is only half the story. In the manufacture of commercial grades of lumber at the sawmill, some seven hundred feet out of every thousand feet of the original tree, the laboratory tells us, is lost or wasted—burned on the waste heap or left in the woods. The main reason, of course, is that the material does not conform to lumber grade standards in point of size or quality and is therefore considered unmerchantable. Much of it, however, is high-grade material, from which small-dimension cuttings could be made. The Laboratory tells us that the requirements of the small-dimension stock consumer can be

pretty well met from this material. Simply change our custom of manufacturing at the factory small chair stock from lumber standards, and manufacture it at the sawmill from material too small for lumber, but admirably suited for small cuttings.

Here, in truth, we eliminate waste—a waste of 50 per cent in the chair factories, an even greater waste at the sawmill and in the woods. Then, too, we eliminate paying freight on that 50 per cent wasted. The change is the practicable, logical, and economic thing to do, says the Laboratory—fair and profitable to consumer and producer alike.

The revelations of the Forest Products Laboratory challenge the attention of the nation. With our forest capital shrinking annually, we can no longer afford to temporize with forest waste. The chair industry is only one of several industries which use small-dimension stock. The Forest Products Laboratory tells us that by eliminating this waste, the life of our hardwood forests will be prolonged one-quarter. We cannot accomplish the same thing by planting trees today, tomorrow, or for a hundred years to come. The critical period of our forest history will be during the gap between the end of our

present forests and the beginning of the harvest of our new forests. We cannot stop that gap entirely, but by better utilization we can shorten its duration.

It is time to seek out forest waste in far places. We commend this report to the new Senate committee ap-

pointed to investigate our growing forest poverty. It will offer to its members the gate to a field of remedial possibilities which no investigative committee has yet adequately appraised. The time has come to stop calling forest waste by economic names and letting it go at that.

PLANT A TREE

ARBOR DAYS are upon us. The whole country is emerging from its confinement of long winter months and is responding to the breath of spring. We are in a rich mood to get out of doors, to work the soil, to dig in the garden. The morning mail is fanning our tree-planting sentiments into a warm glow. It is bursting with tree-planting literature. It brings as a letter from California urging us to join a tree-planting movement. Another comes from an organization in Illinois, and flaunts "Plant a Tree" in large black letters before our eyes. A third is from an organization in the East; again, "Plant a Tree."

Fine! We will go forth and plant a tree, a dozen trees—yes, a hundred trees!! But, first, let us stop and ask ourselves, "What for?" Tree sentiment is fine. We need more trees; we need more tree sentiment. But we want to make both sentiment and effort count, so we reason a moment. Just what are we doing when we plant a tree? That depends upon our purpose. We may plant a tree for shade, for beauty, for its fruit, for its wood, for the enjoyment and recreation of those who follow us, or in memory of some one, living or dead. But let us not become confused. We need shade trees in our yards,

along our roadsides, around our meadows. They will make life cleaner, better, and will give kindly shade. They will beautify the landside; they will provide sheltered spots for rest and recreation. All these purposes we serve by planting a tree here and there.

But let us bear clearly in mind that this kind of tree-planting, worthy and desirable though it is, will not aid materially in meeting the great pressing need of trees for wood—wood that we need every day, in a hundred different ways, for homes, paper, automobiles, some fifteen hundred different things that go to make our lives more comfortable and our country more prosperous, and without which we would all suffer. Therefore, if we would plant a tree with a desire in our hearts to contribute our part toward providing a wood supply for our children, we must plant to start a forest—a forest on a spare half acre or so, a community forest, which the people of our town can watch grow, take pride in, and to which their children may repair for their picnics and outdoor play. Communities whose streets are lined with trees are rich indeed, but the community which, in addition, has a public forest is doubly rich. Let sentiment rule with reason and purpose.

CONTROLLING THE BEAVER

NEW YORK is confronted with a beaver invasion in the Adirondack Mountains. The situation might appropriately be labeled "Beavers is Beavers," because the propagating vitality of the animals under year-long protection of the law has apparently placed the State Conservation Commission in a position analogous to that of the station master in "Pigs is Pigs." What to do with them is New York's problem.

As pointed out in Mr. Leet's article in this issue, a few beavers, liberated in 1905 and given the freedom of the waters and the protection of the law, have multiplied and spread so rapidly that they are destroying the natural beauty of many areas and are doing serious damage to State and private timber.

Beavers are phenomenal wood-cutters and master-builders. They not only fell trees a foot or more in diameter, but they cut up the trunks into bolts four to eight feet in length and drag them into the water for food and for building their marvelous dams. Their heaviest damage to timber, however, results from their dams, which may back up the water of flowing streams and flood standing timber of great value. This is what the beavers are doing in New York.

The beaver is among our most valuable wild animals and its propagation should be fostered, both by the State and the Federal Government. It may be made a real asset in any forest property. In a recent bulletin on the beaver, Vernon Bailey, Chief Field Naturalist of the Biological Survey says:

"Over a large part of our millions of acres of National Forests, beavers are capable of far more good than harm in conserving water and soil, weeding out timber of little value, making the silent places teem with interest, and yielding substantial returns in an annual fur harvest. With intelligent control, to avoid local damage to valuable timber and other property, and with wise restraint to prevent the dispersal of beavers over surrounding country, the usual complaints of damage can be eliminated. On some of the National Forests beavers are already present and in places increasing in numbers, but most of the animals are the western, pale, native varieties, worth much less than the choice, dark, prime fur-bearers, which might be introduced from other sections. Improving the system of stocking, management, and control will place beavers among our valuable forest products."

Beavers are not difficult to control, according to Mr.

Bailey. With a knowledge of their habits, damage may be prevented and the animals kept in restricted areas. Permitting trapping outside these areas where damage is likely to valuable state or private property will ordinarily hold the beaver in control.

The cause of New York's present embarrassing situation is not that the state has propagated beavers, but that it has propagated them without proper measures of control. New York's lesson is likewise a lesson for other states in fostering the raising of beavers.

FARM FORESTRY THROUGH THE COUNTY FORESTER

THE farm woodlot is the foundation of adequate forestry development in the United States. Not because the farmer can be expected to grow the bulk of the timber we require, but because to him and through him we can best teach the real meaning of forestry. The farmer well knows how to grow agricultural crops. The woodlot is part and parcel of the farm; it continues to exist regardless of whether it is intelligently used or thoughtlessly abused. Taxes are paid on it, roads built around it, and other charges incurred by it which are paid by the farm owners and the community. It has not been made the farm asset it should be because the farmer does not know how to grow timber as a cultivated crop. He is learning rapidly that a woodlot pays; rising stumpage prices and expensive lumber bills are impressing this fact. He selects his seed corn and sprays his orchard, but permits nature to manage his woodlot unaided.

Foresters have long urged better management of the farm woodlot. More recently, forestry extension specialists have worked methodically toward this end. But practical results have been slow and uncertain. It is one thing for the woodlot owner to read or hear how to practice forestry, and quite another matter to do it. In agricultural extension, the county agricultural agents develop local initiative and leadership in the farm community. They are teachers of better methods through actual demonstrations, where the learning is by doing. They follow up definite, timely projects to completion, and have a concrete program and a definite goal of accomplishment within a given time. The value of their work is proved by the fact

that the farmers, themselves, willingly pay the greater part of the cost of their services.

Forestry and extension organizations have been too busy with other urgent demands to make the necessary effort to work out the co-operation required to carry extension work in forestry to its logical conclusion. The county agricultural agent is not trained in forestry and his time is occupied within his own field. The interest in farm forestry has developed so rapidly that the All New England Agricultural Conference, held in Boston last January, recommended employment of county foresters to promote better woodlot management. Following this, state directors of extension, state foresters, and forestry specialists from the eleven northeastern states met in New Haven, Connecticut, late in February. The result of this conference is a union of forces and a concrete plan for a comprehensive forest extension program in each of the northeastern states. The goal in the next ten years is *county forestry extension agents* in at least 50 per cent of the woodland counties. The work of these men will be supervised, as are other lines of agricultural extension work, and will be reinforced by one or more farm forestry specialists. They will work in harmony with a policy formulated by the state forester, and in conformity with a program worked out jointly by the state forester and state director of extension.

No better means can be found to further forestry than extension principles and organization. It will balance the farm enterprises and lead the way to greater accomplishment in forestry the country over.

BY ITS FOREST, KNOW THIS CITY

THE community forest idea is taking hold in Georgia. The city of Atlanta is to have a town forest, not merely in name, but in fact—a forest in the building of which the entire community will participate. To the Georgia Forestry Association is due the credit for having started this movement.

The Junior Chamber of Commerce of Atlanta, composed of over one thousand young men, is undertaking to raise the funds needed to acquire the forest. Another committee, headed by the mayor of the city, will select the location of the forest. Still another committee, headed by the superintendent of schools, will enlist the interest and aid of the school children in the planting of trees. There are other committees and much enthusiasm. The

plan proposes that the title to the lands acquired shall be vested in the city of Atlanta for all time, and shall be used for forest purposes only. The forest is to be so managed and regulated that it will be perpetuated for all time. Any revenues derived from it will be used for educational purposes, and the forest is always to be available to the public-school children of the city for educational and recreational purposes.

What finer project could one propose? A forest at the city's edge, creating revenues for the city schools, always available for recreation, a living demonstration of trees and how to care for them—a permanent forest, ever serving, ever available. Truly the time will come when a city will be known by its forests.

Prayer Book in a Pine Tree

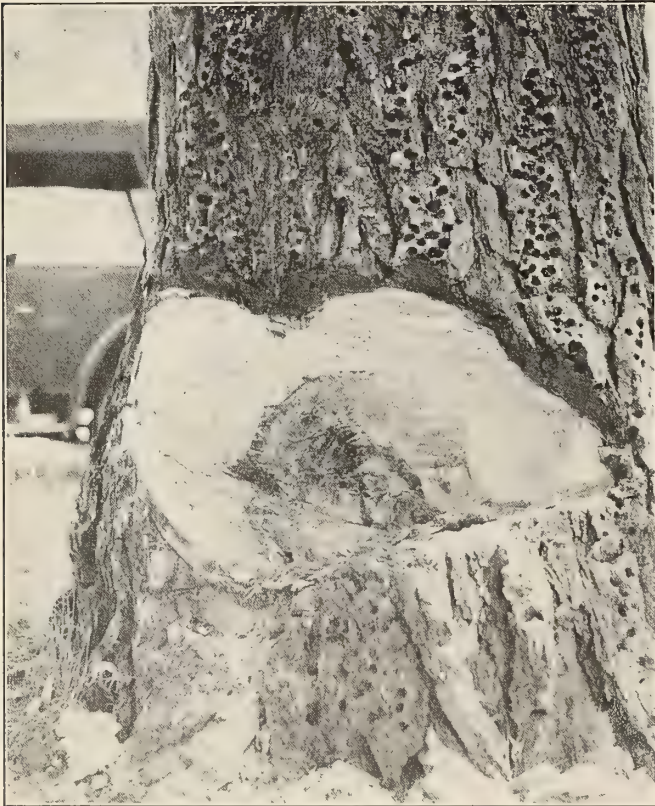
By WOODBRIDGE METCALF

Associate Professor of Forestry, University of California

A SHORT time ago Mr. M. L. Blochman, a student in the University of California, was attracted by a small scar near the base of a large Digger Pine growing on his father's ranch in the Cathay Valley, Mariposa County, California. The tree has been a prominent

old ax cuts came to light, indicating that a V-shaped notch about four inches wide at the outer edge and the same depth had been cut into the tree. The accompanying illustration shows clearly the old notch and the wide annual rings of growth laid on by the tree in closing the wound.

The book proved to be a small leather-covered Bible or prayer book, probably of the Methodist denomination, as the index contains frequent references to the writings of Charles Wesley. In the second photograph can clearly be made out the title, "Sufferings and Death of Jesus Christ," and the page number 67. In growing over the wound the tree had completely covered the volume with a coating of pitch, so that the leather cover was still somewhat flexible. The paper is still in good condition and the print legible, but because of the pressure exerted on the top and bottom of the book in closing the wound, it is impossible to turn the pages. The book had been placed in a horizontal position in the old cut, with its back toward the



THE CUT IN THE DIGGER PINE WHICH REVEALED THE LITTLE PRAYER BOOK PLACED THERE MANY YEARS AGO AND ABOUT WHICH MUCH CONJECTURE HAS ARISEN

landmark for years, as it is situated on the crest of a little knoll overlooking the valley. This knoll is not without interesting historical associations, as two Indian skeletons and a number of objects of Indian handiwork have been found in the vicinity. Local historical lore has it that the spot was once a meeting place of the old Indian tribes. Be that as it may, white men have passed the knoll with its sentinel pine for many years without noting anything unusual about the tree.

Mr. Blochman, in a moment of idle curiosity, ran the blade of his knife into the narrow scar and felt it strike something soft. A few probes with the blade brought to light tiny bits of what was undoubtedly paper, and on one of these a figure could be traced. With visions of buried treasure, directions for finding which might be in this mysterious volume, he soon returned, and with the aid of a sharp ax cut carefully into the tree above and below the old scar.

After cutting through several inches of new growth,



THE SMALL LEATHER-BOUND PRAYER BOOK AS IT LOOKED AFTER LYING FOR ABOUT SIXTY YEARS WITHIN THE TRUNK OF A PINE TREE GROWING AT AN ELEVATION OF 1,200 FEET IN CALIFORNIA

center of the tree, and the gradual encroachment of new growth into the wound compressed the pages from top and bottom of the book until they were forced into an almost vertical position along the outer edge and show folding in wavy lines similar to rock strata which have been compressed. This gives a splendid idea of the progress of tree growth in closing a wound.

In searching for a counterpart of the little volume, one with somewhat similar binding and type was found to have been printed in 1849. Ring counts have not as yet been made on the cut, but it seems altogether likely that the tree has had the little volume in its keeping since the early fifties.

The Digger Pine (*Pinus sabiniana*) is one of California's most interesting tree species. Its gray green foliage and branched trunk are a welcome sign to the traveler in the brush fields of the foothill country that he is approaching a forest belt. The tree seems better able to stand drought and competition of chaparral species than almost any other conifer. Its cones are large, chocolate brown in color and the cone scales are more heavily armed than any except the Coulter Pine. The seeds are mottled black and reddish brown with a coat of almost flint-like hardness and a long wing. They are larger even than Sugar Pine seed and quite as good eating as the latter species, when one finally is able to crack the coat.

The reader will notice the large number of holes in the bark of the Digger Pine in the picture, which illustrates the sagacity of woodpeckers in the Sierras. These birds take the acorns of California Black Oak (*Quercus kelloggii*), which abound in certain parts of the region, and place these in the holes in pine bark such as seen in the picture. The birds are not interested in the acorns, but in the weevils which infest many of them. These little white grubs grow large and fat, each in his little house in the pine bark, and when each has reached the most toothsome stage the wise birds return to these bark storehouses, remove the acorns, and feast on the grubs. Surely this is an indication that the habit of storing for a rainy day is not confined entirely to the human race.

A Unique Gift to the Yale Forest School

The School of Forestry has received a gift of unusual interest from the Yale foresters of the Orient. This is a historic table made of *Narra*, which is the most highly prized decorative wood of the Philippine Islands. The table is nearly eighteen feet long and about five feet wide and is admirably suited for the reference library of Sage Hall, the new building of the School of Forestry. The table was originally presented to the Mayor and Council of Manila in 1886 by the Manila Botanical Garden, which formerly had charge of the Bureau of Forestry under the Spanish régime. The crating used for the shipment of the table is made of boards, each representing a different species of Philippine woods. Thus the crate was made up of museum specimens of forty-five different species of wood.

A Lesson from Persia

The entire country around Lake Urumia, in northwest Persia, including mountains, foothills, and plains, are bare of all unirrigated forest growth, says Edward C. M. Richards. It has been in this condition as far back as history goes. There is nothing, therefore, to store the rain water or snow, and a large percentage of the water rushes down torrential streams in the spring into Lake Urumia and is lost in that strange mixture of salt brine. Only a few weeks later the rich farm land is baked hard with drought, but the water which could have been stored and used for irrigation has been lost. Another case of the evil effects of forest devastation.

Proof of the former existence of forests in this region lies in the form of many huge hills or mounds of ashes scattered over the great plains. One of these hills is fully 200 feet high and a mile or more around. Dig into one of these hills and you will find broken pottery, ornaments, old coins, etc. The ancient Zoroastrians, or Fire Worshipers, kept their eternal fires burning here for countless generations that lived and died before history began to be written, and they had to have fuel. A very clear proof of what happened to the forests of that country, and another strong argument against the present reckless destruction of our forests here in the United States.

No "Fair Greens" For the Next Players



Filibert Roth

A Letter of Appreciation from an Old Friend and Colleague

THIS opportunity to express my appreciation of the worth and work of Prof. Filibert Roth, who has retired as Dean of the Michigan Forest School, is eagerly accepted. Every colleague, student, and friend of Professor Roth—and they are legion—will most heartily join in this simple tribute to him. His personality combines to a most remarkable degree the great qualities of ability, patience, and geniality. No man has worked



FILIBERT ROTH

Retiring Dean of American Foresters

harder or with more intelligence for the welfare of America's forests than Filibert Roth.

He comes from the sturdy, hard-working, genial stock of old Württemberg. Although only a boy when he reached America, he brought with him an inborn appreciation of the Old World methods of forest culture. He plunged into our western frontier, which was at that time a hard but efficient school for the newcomer. In 1890 he was graduated in Science from the University of Michigan, and it was as students there in biological work that we first met. From that time on, through many years of close relationship, I have always found him the same—tireless, genial, patient, and ever ready to help in case of need.

We met later frequently in the Department of Agricul-

ture, when Fernow was Chief of the Division of Forestry, and finally again as colleagues in the New York State College of Forestry.

There are few of the old school of foresters left who entered the game when forestry was in its infancy in this country, when many men ridiculed the idea, and when the remuneration and prospects for success were very slim. The number who stuck to it through thick and thin, over such a long period of time, is small indeed; but Roth is one of them. A man with his knowledge and ability, with his physical vigor and sterling qualities, could have made a fortune in almost any business activity; but he stuck to his chosen profession and has to his credit many grateful students and ardent friends and admirers throughout the land. Roth has done his share to help make this world a better world to live in.

When the New York State College of Forestry at Ithaca was rather ruthlessly junked, I was discouraged. Though forestry always held and still holds first place in my mind, and although the best years of my life in this country and Europe were spent in training, I drifted away into other fields; but Roth stuck and went back to his *alma mater* at Ann Arbor, which he loved so well and where he has steadfastly worked since 1903.

In the year 1895, when I started a little paper, called the *New Jersey Forester* (which afterward developed into this very magazine), Fernow and Roth wrote the first articles.

Cornell and the University of Michigan were somewhat alike in the early days; in fact, Cornell was often referred to as the daughter of the University of Michigan. The latter being his *alma mater*, Roth was able to continue his work to as good, if not better, advantage, while the rest of us sought new pastures in more distant lands.

Roth's dominating characteristics were always ability to accomplish, equanimity, geniality, uprightness, modesty, and self-sacrifice. His knowledge of timber physics and his ability to interest, instruct, and constantly hold the loyalty of the many students who worked under and with him for so many years was remarkable. Many men have made good in forestry under the inspiration of his guiding spirit. I am fully convinced that some of the best foresters in the United States today are primarily the product of Roth's inspiration and teachings. When he reads this he will, no doubt, smile and claim that I flatter him, and that I am handing out my old-time ration of "blarney." But this is not talk. It is in cold type, over my signature, which means much to a man who buys and sells and borrows and loans.

As his old friend and colleague, I know I will be joined by hundreds of others, who have benefited by his association and teachings, in wishing him a very long and happy life in his retirement, for he has doubly earned it.

JOHN C. GIFFORD.

America's Transition from Old Forests to New

By E. T. ALLEN

III. THE PRESENT

WHEN in our forest history did a steady down mark the sobered maturity of a nation that hitherto had dissipated its resources with the extravagance of youth? When did the finders and exploiters—golden-goose killers or builders, as you choose to have it—who were the lumbermen, the consumers they served, the firers of the forest, and all the rest of us,

final economic solution—a period we have now well entered, but from which we have not emerged. It was when the costs represented in virgin timber were foreshadowed to exceed the costs of growing new timber to compete with it.

It was in 1906-7 that timber trading in the West reached its peak. Land values that had skyrocketed since 1900



(Copyright, Cress-Dale Photo Co., Seattle)

A SCENE ON LAKE COEUR D'ALENE, IDAHO. THIS LAKE, ONE OF THE MOST BEAUTIFUL IN NORTHERN IDAHO, IS A CENTER OF LUMBER PRODUCTION IN THE INLAND EMPIRE. EVERY SPRING ITS WATERS ARE ALIVE WITH LOGS WHICH HAVE BEEN DRIVEN DOWN THE MOUNTAIN STREAMS WITH THE SPRING FLOODS. AS THIS PICTURE SHOWS, THE LOGS ARE THEN COLLECTED INTO SORTING BOOMS AND DELIVERED TO THE SAWMILLS LOCATED ALONG THE SHORES OF THE LAKE

begin to eye each other with any constructive consideration of a longer life for aforesaid goose? In short, when was a three-century past succeeded by a differing present? And what happened to mark it? Did monopoly begin, as many had feared, or forestry?

The answer is that neither of these began when, about fifteen years ago, a situation which at first was felt by few except disconcerted and uncomprehending speculators, really indicated both the commencement and the trend in the United States of that formative period all nations experience between their destructive exploitation and their

then fell perceptibly, to advance again but little, even to this day, except for tracts easily accessible. For cutting, rather than holding back for speculation or monopoly, proved the inevitable consequence of borrowing and over-investment in raw material. Providence declined to repeat the experience of the Lake States. The game had been pushed too fast and too far from centers of consumption. Long rail haul and competition from the nearer South fixed a market limit just west of the demand. Substitutes for lumber, like cement and steel, entered all markets at a competing price level and better advertised. And there

appeared the still more sinister shadow, entirely new to an industry which had always moved westward with the sun, of mounting interest and taxation and their inexorable pyramiding, during too long a wait for the "sugaring off," to a cost impossible to pass on to the consumer.

The result was attempt to liquidate by sale or manufacture, far from stimulating interest in conservation or forest-growing, but on the other hand assuring the public competition rather than monopoly or price-fixing. Every upward fluctuation of possible profit increased production, which, like a trip-valve, quickly restored the former level or a lower one, as each such attempt added to superfluous mill capacity. Unfortunately for the consumer, this was not always reflected in lumber prices, differences being often absorbed by labor, transportation, and like factors.

THE NEW WESTERN OUTLOOK

Simultaneously, however, came a new western outlook seldom glimpsed in the older regions, from which the vanishing industry had only to move west to find ample timber, now gladly offered by the overloaded advance guard. This being the last of the supply, it must be guarded from fire. There is no more to move on to. Moreover, the investment is in it, with taxes and interest accumulating yearly, meaning heavy loss if it burns. And the fire hazard, unexpectedly high from the beginning, grows yearly with human activity. From this situation, in itself discouraging, grew another of profound significance and promise, destined to color the whole growth of American forest policy.

How it led first to the co-operation of private and public forest agencies to combat a common enemy; how a new appraisal of reforestation came from protecting all lands from fire; how all this demonstrated a possible solution of factional differences; and how these combined developments of the frontier created an impulse which moved eastward, in reversal of the expected course of forestry reform, must be told partly in the past tense, but is distinctly a story of the active, urgent present. And to

understand its full bearing we must know how the past has become the present in other forest regions.

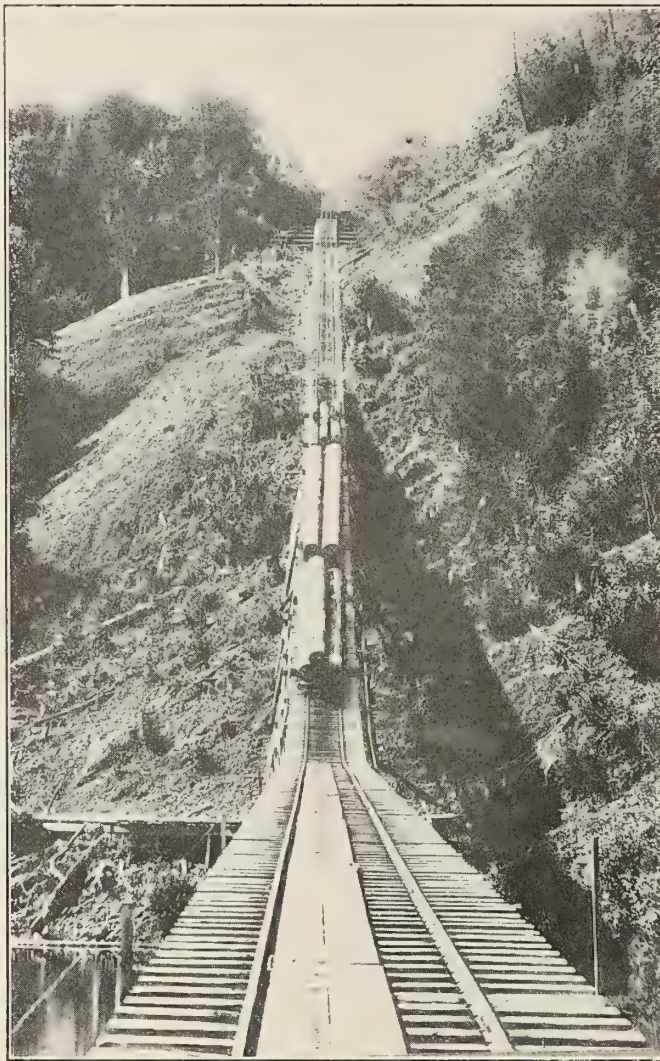
The forestry movement in the United States has been enlivened much more than it has been promoted by recrimination between elements whose co-operation is absolutely essential to any real success. Where forestry is a fact, it is not a thing distinct and opposed to use of the forest. It includes lumbering—indeed, is lumbering, so conducted as to perpetuate itself. It begins with use and ends with use,

for the purpose is to grow material that can profitably be cut, manufactured, and used. The entire cycle must harmonize economically.

As a rule, history shows us, this conception comes to a nation gradually, through economic forces. Except in a few hopelessly decadent countries, these forces begin to improve forest conditions and forest use just as that stage of development when it becomes apparent that the diminishing virgin timber supply can no longer be certainly available at a cost less than that of tree-growing. While it is so available, no one can afford to grow trees to compete with it. When the balance is turned or sufficiently foreshadowed, interest in tree-growing begins. Either too low virgin stumpage prices or too high production costs defers it, and neither sentiment nor legislation can hasten the project—at least not as a feasible business project unsupported by public subsidy—much in advance of a satisfactory adjustment.

THE ZEAL TO AVERT A TIMBER SHORTAGE

But they can retard it by confusing the real issues and creating unnecessary obstacles, which is just about what happened. In our zeal to avert the shortage which we apprehended would be the earlier and more disastrous because of our rapid national growth, we sought to learn the Old World's lessons without digesting them, and by force of law and sentiment to impose methods in advance of conditions on which they are founded and even without finding out if they were suitable for our particular forests. And many of our forestry reformers did not differ greatly from others, in that the reform itself was no more important to them than that it should be accomplished in



(Courtesy U. S. Forest Service)

A RAILWAY INCLINE IN WASHINGTON USED TO LOWER LOADS OF LOGS FROM PORTIONS OF THE MOUNTAINS TOO STEEP TO PERMIT THE OPERATION OF LOGGING LOCOMOTIVES. THE CARS ARE LOWERED BY STEEL CABLES OPERATING ON A HUGE DRUM AT THE TOP OF THE MOUNTAIN. THE GRADES SOMETIMES RUN AS HIGH AS 60 PER CENT

their way and by no means in the other fellow's way. This approach was not only somewhat offensive to the man who owned the forest and thought he knew something about what he should or could do with it, but equally conducive of disagreement among the reformers themselves which resulted in his further bewilderment; also of disputes between States and Government and inside of States and Government. The only thing the lumberman was sure of was that if he dropped his defensive he was lost, and the only thing the others agreed on was that the lumberman was the chief obstacle.

This sort of reform began just soon enough to embroil all concerned in controversies and resentment that prevented them from recognizing and welcoming the arrival of the economic stage which promised success if it were calmly appraised and co-operatively utilized. This arrived about simultaneously with—being partly the direct result of it and partly due to the same causative reasons—the disturbance of western conditions about fifteen years ago. The end of the old forests was not near, but the element of cost represented in them began to have a relation to the cost of growing new ones to compete with them. Transportation to consuming centers was soon to become a tremendous factor in this competition. The public could and did begin to pay for near-by raw material a price determined by the rail haul on distant material. The permanent lumbering type, first exemplified by the paper-pulp mills, began to look to the perpetuation of home supply.

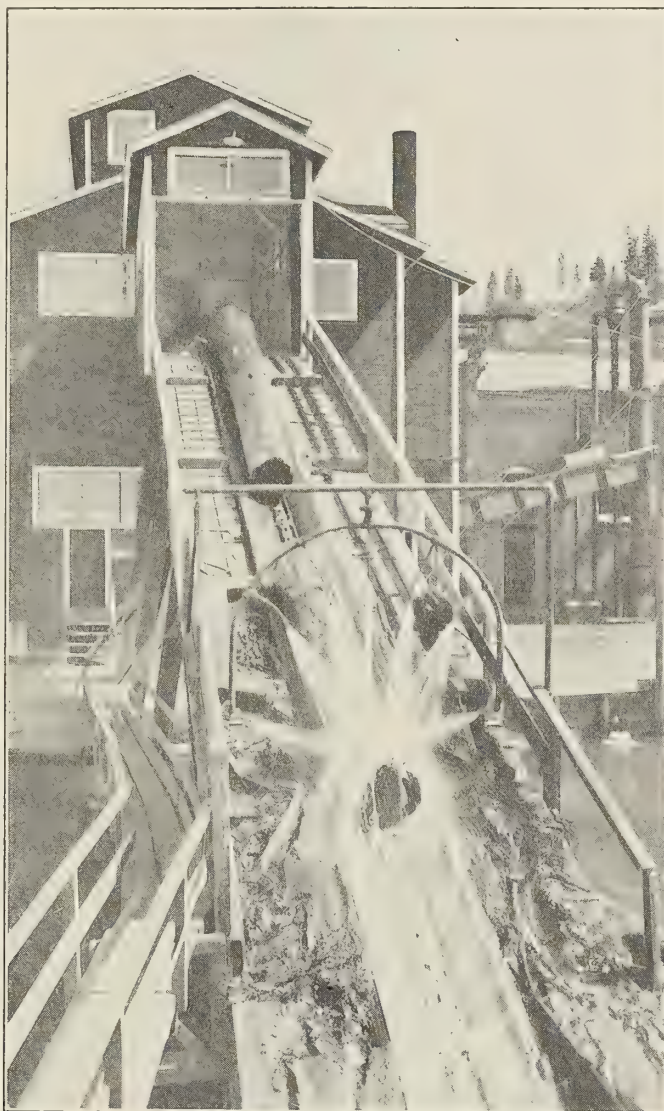
In other words, the end of the comparatively free raw material, together with overinvestment in a nevertheless tremendous supply and with mounting costs of utilizing this, presented a new and distinct problem. It could be premised that the great western holdings will bring a price on the one hand influenced upward by eastern shortage and by the staggering carrying costs it is accumulating during the wait for utilization, but on the other always held down, not only by what the consumer will pay, as determined by transportation and by the competition of

substitutes and of home-grown supply, but also by enforced cutting due to the pressure of carrying costs and to the fear that the consumer will refuse to reimburse these beyond a certain limit. However, this price, plus transportation, will be high enough to make the growing of competing timber profitable if, in turn, its costs and risk are not too high. The problem, then, was at least fourfold: To assure a supply when the old one is gone, in a quite-distant future; to assure competition with the

last of it; to minimize the cost represented by old and new, everywhere, for if this is too high to make wood use practicable, there may as well be no wood; and, finally, to do all this without destroying the solvency and usefulness of the great participating industry largely organized on another footing left precarious by the turn of events.

TREES NOT GROWN BY LANGUAGE

It is not surprising that such a problem has failed of solution in the few years which have elapsed, mostly devoted to unconstructive disputes inevitable in the effort of every element involved to find a selfish solution. It was soon apparent that in the main it is a financial problem far more than a silvicultural one; that the mere persuasion or compulsion of lumbermen to adopt certain expert processes they are technically incapable of discovering themselves will not necessarily benefit them as well as the public and soon result in making reform welcome and automatic. In other words, trees cannot be grown by language or printers' ink. Land values are



(Copyright, Cress-Dale Photo Co., Seattle)

THE SHOWER BEFORE THE SLAUGHTER. THIS PICTURE, TAKEN AT A SAWMILL IN IDAHO, SHOWS A SPRAYING DEVICE SO ARRANGED THAT EVERY LOG IS THOROUGHLY WASHED AS IT ENTERS THE MILL, SO THAT IT WILL BE FREE OF DIRT AND PEBBLES, WHICH DULL THE SAWS

concerned; money tied up for long periods; investment in more or less costly methods at the expense of the consumer; lumber prices; competitive advantages and handicaps, transportation included, and other questions, involving alike the consumer, the taxpayer, the lumberman, and the lumberman's bankers, creditors, and employees, to say nothing of others depending upon the nation's largest manufacturing business.

The most immediate and conspicuous result, since misunderstanding and distrust were already well ingrained

and perhaps warranted, was complete neglect of effort at a mutual solution and a concentration on how to make the other fellow pay all these costs. Extremists on one side had no doubt that lumbermen should and could do this from ample funds supposedly acquired by processes of unearned increment and extortion. Equally extreme and selfish lumbermen were not wanting to advance the logic that, since they would not profit and the public would, it was obviously a public investment entirely. They denied any responsibility of stewardship. Self-elected champions on both sides did most of the talking, accomplishing nothing so signally as to convince the rank and file that both were unreasonable and unsafe leaders.

The situation next drifted into threats of force as the only means of proving which was right, much as champions of old decided who had the loveliest lady; and various sorts of bills—about as many as there were schools of reformers—were introduced for the consideration of our lawmakers, who for the most part did not pass them because of violence of proponents and opponents alike. American forest destiny came to look to a large proportion of those who were interested in it at all as though it depended upon whether public police power shall take over the management of the industry, in which case it presumably can take over all industry, or whether the Bill of Rights lets a lumberman wear his forests as personally as he does his watch-chain. And, as if this were not alone a sufficiently discouraging situation under which no agency could make much progress, it was further aggravated by controversy as to whether state or nation has the appropriate police power and the competence and interest to use it. State's rights did not die thoroughly dead at Appomattox, nor is the precedent for other industries insignificant.

Forestry, the foundling, was growing up. At first nursed by the woodman-spare-that-tree sentimentalist, it became the playmate of the scientific arboriculturist, advanced to high place among our national-resource problems, shouldered into the most technical and important of financial considerations at a time when we had about all the tax and cost-of-living troubles the nation could bear, and finally went as far as any American problem can go, which is into politics. But it thrived best in the

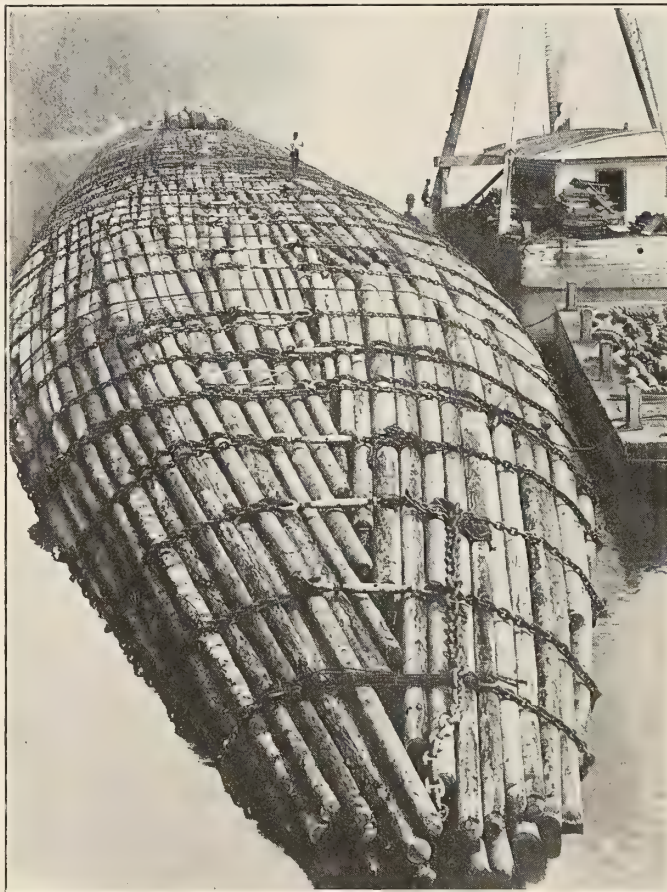
woods of controversy. In few parts of the United States did it venture into the real woods to encounter fire, unfriendly taxation, an indifferent public, and skeptical lumbermen.

THE FORERUNNER OF HOME-GROWN FORESTS

Exceptions to the last statement, aside from the much closer utilization of material, which is an important but rather distinct phase, are now to be found mainly in the publicly owned forests not on a business basis, the pulp regions where heavy plant investment must be protected and very young trees can be used, occasional individual experiments by progressive lumbermen where conditions are exceptionally favorable, and the Pacific Coast. But the latter region represents a spontaneous development, rather than the prevalence of traditional propaganda, and one which we can now survey with better appreciation of its possible significance as the forerunner of a home-grown American forestry.

As a rule, the lumberman is an individualist. The industry shows little cohesion. But the necessity of systematizing fire-prevention in the Pacific Northwest led to the invention in Idaho, in 1906, of co-operative patrol and fire-fighting associations. The movement spread, until now such organizations extend from Montana to California, employing an army of trained men and expending from \$500,000 to \$1,000,000 annually, according to seasonal hazard, and guarding some 35,000,000 acres. They were naturally the first to campaign for rigid fire laws, bearing upon lumbermen as well as the public, for timber investment is greater than that in logging operations. Co-operation in perfecting technical methods and in bringing non-progressive lumbermen into line extended from state to state. Thus was developed a hitherto unfelt interest in the forest itself, no longer a featureless impersonally regarded supply of raw material to be cut or traded, but a property to be learned, lived with, and fostered.

An equally potential accident, unparalleled elsewhere in the United States, was that which placed the Government's National Forests and the Western states' forested grant lands contiguous to and intermingled with these vast private holdings. Federal, state, and private agencies drew together like drops on a pane, into the closest of



(Courtesy A. M. Prentiss)

THIS IS A SEAWORTHY CRAFT IN WHICH PASSENGERS AND ALL ARE OREGON LOGS. CHAINED TOGETHER FOR A LONG AND ROUGH VOYAGE UP OR DOWN THE PACIFIC COAST TO A SAWMILL PORT. THEY ARE BUILT TO WITHSTAND THE OCEAN STORMS

co-operative systems, to increase protective efficiency, and to share costs without duplication. Each had also specialties to contribute. The Government men averaged the most active in research and invention; the private owners in principal adaption and execution; the states, mainly responsible for the use of police power, in testing and strengthening the rod of public regulation. For the first time in American history, lumbermen and foresters, industry and public agencies, became affiliated and friendly, working toward similar ends, learning from each other, and dispelling the ancient misunderstandings.

The next step, interest in the crop to follow, was inevitable, partly because of the relationship described, but no less because of peculiar local conditions. In spite of the fact that there was too much old timber in private hands, the protection of this led to consideration of new growth. This soon proved a lesser hazard to uncut timber than the debris on non-reforested contiguous lands. Fire runs, so protection could not be confined to merchantable timber. The public agencies, particularly the Federal Forest Service, whose co-operation, financial and otherwise, was wanted, insisted constantly that young growth must be included. And, finally, it was discovered by lumbermen and foresters alike that with fire prevention little effort in connection with operations is necessary to secure swift and certain reproduction of much of the western forest area. Good silviculture conforms closely

with ordinary commercial practice. Denuded tracts which escape fire are, as a rule, restocking densely with unexpectedly rapid growth.

THE LUMBERMAN MUST PLAY THE GAME

So the intelligent western lumberman found himself not considering the effort of starting a new crop, but already growing it. He didn't take the plunge, but slipped in. His problem is how hard to swim. The course is far from clear. Forest taxation is archaic and confiscatory. Carelessness with fire is the rule. Starting the crop is a different matter from carrying it to maturity. To the extent that further effort is necessary to start it in the more unfavorable sites, he feels like most lumbermen, that the responsibility is not all his. But, unlike many, he cannot move on and dodge it. He knows he is there to stay for a lifetime, during which every phase of his business will be affected by public opinion. He has bought his chips and must play the game out. Meanwhile on most of the cut-over land a new crop is being fairly well guarded by joint private, State, and Federal effort, for which he pays about three-quarters of the cost. The co-operative system which makes this possible is also working on technical forestry questions concerning the minority remainder of the area, to see how responsibility for this may be divided.

But how does this affect the broader problems of Amer-



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A LOG POND AT A WESTERN SAWMILL, SHOWING SPLENDID LOGS READY TO PASS INTO THE MILL AND BE TRANSFORMED INTO LUMBER. LOGS, LIKE CATTLE, ARE "HERDED" INTO MILL-PONDS, THERE TO AWAIT THEIR SACRIFICE TO THE MYRIAD NEEDS OF MAN

ican forest policy, which we have seen so muddled by misunderstandings and promised ourselves would be cleared by light from the West? Well, you will remember that the Government is an important factor in the western system, with its more than a hundred million acres of National Forests, its army of foresters, and its participation in the triple fire-fighting alliance. In the last fifteen years it has learned a great deal and taught a great deal, acquiring much knowledge of the efficacy of both processes. And so, about two years ago, the Forest Service proposed a program about as follows:

Make a sort of inventory of the real situation of all our forest lands, to see what we have to work on and learn its real condition. From this determine the urgent and immediately practicable steps that will prevent the situation from getting worse and improve it considerably, without being further delayed by the controversy over extremes that cannot be reached anyway, even should they eventually prove necessary, until such a foundation has been laid and tested. Take up these urgent steps co-operatively, as proved so successful in the West, each agency doing a fair share and deprived of grounds of resentment against the others. By this process not only determine the degree to which it alone may solve the problem, but also approach on firm footing such additional and more difficult steps as may prove requisite.

WHAT THE FOREST SERVICE FOUND

Such a preliminary survey was made, and here is what it disclosed: Of our true forest land, over 463,000,000 acres, upon the proper management of which we depend, a fifth is publicly owned, a third is owned by farmers, and 47 per cent by lumbermen. A little less than a third still bears virgin timber, although this is largely in the West, where the stand is heavy. About a quarter is reclothed with usable tree-growth that has followed lumbering, perhaps again and again, for some has been cut the third or fourth time. A somewhat larger area is struggling to restock, having a partial growth of trees too small to use, with the outcome mainly dependent on escape from fire. About 17 per cent has been misused and burned, so that only planting can redeem it.

Considering the two-thirds that has been deforested, about a quarter of the scars caused by logging and fire remain wholly unhealed; 41 per cent is trying to reforest naturally and would succeed if given the protection we would have to give forestry of any sort; 34 per cent has succeeded pretty well in spite of almost total neglect.

Taking the country as a whole, considerable good would be done by better cutting methods, but not unless fire prevention protects the results; and when it is reflected that the great majority of potentially productive land presents a restocking rather than a cutting problem, it is seen why the Forest Service reported that fire prevention is 75 per cent or more of our immediate forestry program.

Or it could be stated in another way. None can announce now the ultimate extent, location, and ownership of the total forest area which will be found necessary. Ownership and responsibility will work out ownership distribution through economic development, as it has in

older countries. Fire prevention, more scientific taxation, and its position as tributary to permanent manufacturing enterprises will leave a considerable proportion in private hands. State and nation will be obliged to acquire the remainder. Meanwhile it is highly important to maintain productivity, which is partly a question of better cutting methods, but still more urgently one of protection, not only merely to save the growth we already have started, but because American forestry is learning that it is more important than cutting methods in starting new growths.

THE FORESTER'S FOURFOLD POLICY

For these reasons, then, the Chief Forester of the United States, Col. W. B. Greeley, proposes an immediate fourfold policy, in addition to the National Forest project already well under way: (a) Co-operative fire prevention, extended to all lands, under state supervision and police power, but with Federal financial assistance if the state and industry do their share; (b) continued but not immediately extravagant Federal acquisition of forest land; (c) Federal co-operation with the states in tree-planting where this is profitable; and (d) increased research into the growth and use of forests, upon which further steps can be based. And in addition to this program, requiring congressional action and appropriation, he proposes Federal co-operation with states and industry in determining what improvements in cutting methods are desirable and the extent to which these need be furthered by public regulation and by public reciprocity to make them just and economically practicable.

Such a spirit being in line with American institutions, as well as having already proved constructive in the West, it has the endorsement of the majority of states and lumbermen. Perhaps the most significant feature of the program proposed is that it recognizes, as we have not before, the practicalness of not crossing bridges before they are reached.

Possible forest legislation is of three kinds: First is that which is both urgent and undebatable. Second is that of immediate importance but debatable as to exact form and extent until certain available facts are agreed upon. Third is legislation glimpsed as perhaps eventually to be needed, but only in the future, after time and experience, with the results of classes one and two, determine its necessity, extent, and form. To attempt it now is both to anticipate and to do this on a basis of pure prophecy—and the prophets differ.

Previous attempts have been largely to include all three classes of legislation in single opposing bills. Controversy over the uncertain features has prevented the adoption of an otherwise simple and far more urgent first-step program. Now, however, there seems to be quite general agreement to begin with this and take up the other steps in due time and order. As the creation of National Forests was the first great move made by the Government, this promises to be the second, from which, before it is too late, we may emerge from the alarmed and formative present to a future of defined and adequate forest policy.

[EDITOR'S NOTE.—This is the third installment of Mr. Allen's article. The final installment will appear in an early issue.]

Tree Stories for Children

The Leaves of the Aspen Tree

BY MARY ISABEL CURTIS

THERE was a great twittering and chirping of birds, early one morning, among the branches of a group of trees which grew beside a road in Palestine. This was in the days when wicked King Herod had commanded that all the baby boys in Palestine should be put to death.

The birds, who could fly around out in the world, used to pick up bits of news and keep the trees informed of what was going on. They were, as much as could be, like little live newspapers. But this morning the birds had special news.

"Wake up! Wake up!" they cried eagerly, "and listen to what we have to tell you! Wake up! This is a wonderful day for you! The Heavenly Christ-child, with His mother and Joseph, will come this way on their flight to Egypt. They will pass close beside you on this road, and you can see the Child and do Him reverence."

Immediately the trees were wide awake. They shook out their leaves in the fresh morning air and all began to talk at once in great excitement.

"See!" cried the fig-tree; "these most beautiful of all my figs have ripened in the night. I shall drop them in the road as an offering to the Holy Babe."

"And I," said the date-palm, "who have never bowed to any one except the great and wise King Solomon, I shall bend down my head so that the travelers may gather fresh dates from my royal crown to nourish and refresh them on their journey."

A slender aspen stood at one side of the group and listened while the other trees were talking.

"What foolishness!" it said disdainfully. "I bow my head to no one but the storm wind, and that I do only to save myself."

As it spoke, the aspen held itself erect with pride and looked at the other trees to see what answer they would make. But before any one could speak, the birds, who could see far down the road, called out:

"The Master comes; bow down, bow down before Him!"

Then all the trees and flowers bent low in reverence, and the birds bowed their little heads before the baby Christ. The aspen tree was the only thing in sight that would not bow its head.

The travelers came slowly along the road, while everything in nature worshiped the Baby lying in His mother's arms. When they were opposite the group of trees, Mary, the mother, looked up and saw the aspen tree with its head high in the air, refusing to give honor to her Son. She stopped and looked with sad astonishment at the defiant tree.

"Are you so proud," she asked, "that you will not even bow before your Lord; when kings and nations worship Him?"

The aspen heard her speak, and at the same time it saw the sweet face of the baby Christ. Suddenly it felt ashamed and sorry for its ill-natured rudeness. Its boughs and all its leaves began to shake and shiver as if it were cold or ill; and from that day to this the leaves of the remorseful aspen tree have never ceased to quiver.



THE STEEL TRAILERS WHICH ARE USED TO HAUL THE WILLOW BRUSH AND POLES USED IN MAKING THE FASCINE MATS

Holding the Banks of the Mississippi

By NORMAN C. McLOUD

TREES have come to play an important part in the protection of Mississippi River embankments from destructive erosion and the prevention of disastrous floods. In this important work they have been found to serve a purpose for which nothing else has met with such definite success, and army engineers voice strong approval of their protective value.

For this use the trees are woven into mattresses of enormous proportions. In size these fascine mats suggest to the casual observer the workmanship of the mighty looms of a race of giant weavers. Willows of considerable growth constitute the material, and when bound together and anchored to the face of an embankment they are regarded as indispensable aids to the work of the engineers seeking to solve the flood problems of the central valleys.

The washing away of the river banks has been one of the constant and serious sources of trouble in man's conflict with the Mississippi. It has been estimated that in

the 750 miles between Cairo and the mouth of the Red River the average annual cutting has amounted to a billion cubic yards. This meant the removal from the banks of a volume of earth equivalent to a strip 500 miles long, 100 feet wide, and 100 feet deep. Reduced to smaller terms, more easily grasped, the estimate shows that a bend which "cuts" for a length of five miles, 100 feet in width and depth, removes material sufficient to cover a full square mile to a depth of 100 feet. Imagine a ten-story building a mile square and the picture is complete.

In the process of erosion and cutting, this vast volume of material is largely deposited in the first crossing below the bend, filling it to a depth of ten feet for perhaps one or two miles, while a portion is carried on to some crossing further down. As the river falls, it must find a new channel through the obstacle created by this deposit. This involves a constant shifting of the river's channel and points to the importance of preventing erosion wherever possible.



ONE OF THE HUGE WILLOW MATS IN PROCESS OF MAKING. IT IS NOW ABOUT 500 FEET LONG, AND IT WILL BE 250 BY 1,000 FEET WHEN IT IS COMPLETED

It is declared that the only impediment to navigation in the Mississippi is the existence of bars caused by caving banks. Experience has warranted the statement that cutting off the source of supply is the surest method of preventing the formation of these bars—a method which one authority has described as “starving them out.” In this process of starvation lies the usefulness of the revetments of which the willow mattresses are a principal factor.

The revetment work involves the use of the willow mats in conjunction with concrete paving. The mats are used under water, and the concrete is placed along the face of the embankment above the water line.

The size of the mattress for application at a particular

These willows, hugging the face of the submerged embankment, have proven effective in preventing the undermining action of the current, which has been such a destructive factor in the erosion of the embankments, while the pavement along the bank, extending to a point well above standard high-water plane, carries the protection to the portions not submerged.

In the opinion of army engineers, the combination of the woven willows and the paving afford the protection so long attempted. The adoption of this form of revetment was the result of much experimental work, through which came the development of the present type.

Striking testimony as to the durability of the willows



A VIEW OF THE COMPLETED 1,000-FOOT EXTENSION UPSTREAM TO REVETMENT, CONCRETE UPPER BANK PAVING FASCINE WILLOW MATS

place is regulated by the length of the section of bank for which it is to afford protection. To be effective, the mat reaches from end to end of the exposed section. Its width also varies with the local requirements. One of the illustrations shows a mat in the making. As photographed, this is 250 feet in width, with length of 500 feet, and when completed it will have a length of 1,000 feet.

In engineering terms, the mat is known as “the continuous woven-willow type.” The weaving is after the fashion employed in the making of baskets. When completed, the mattress is anchored by means of galvanized steel wire to “deadmen” back of the top of the embankment. Thus anchored, the mat is sunk until it comes into contact with the sloping bottom of the submerged bank. To accomplish the sinking, riprap stones are placed on the willow surface, and these stones serve the additional purpose of forcing the flexible weave to adapt itself to irregularities in the river bottom for the prevention of underflow.

is given by government engineers. One statement carries the claim that the revetments are as nearly imperishable as any of the works of man. This claim is explained thus:

“All but a very narrow strip of the mattress is constantly under water, and even the edge is submerged for a long enough period to thoroughly leach out those acids which tend to decay the brush, so that in a short time the willows are robbed of their rotting qualities.”

In this connection engineers of long experience in river improvements declare that they have taken from streams the wood from old vessels and trunks of trees which had obviously been submerged for a great many years. “In excavating for a new mouth of the Osage River,” says one of these authorities, “we found in the bottom of the cut, below the line of permanent saturation, black-walnut trees over which there were growing white-oak trees that must have been 600 years old. Those walnut

[Continued on page 249]

Seating the Nation

[Continued from page 217]

of material wasted under the present practice of remanufacturing at their factory commercial grades of lumber into small-dimension stock or the increased cost of those remanufacturing operations. The producers of lumber, on the other hand, are not familiar with the requirements of the various wood-consuming industries.

Contrary to the belief of many lumbermen and wood manufacturers, the manufacture of small-dimension stock at the sawmill instead of at the chair factory is practicable, logical, and economic and will assist directly in solving the wood-waste problems of timberland owners, lumber manufacturers, and fabricators of wood. It will be profitable to all wood-producing, distributing, and consuming interests. It will extend the life of our diminishing hardwood forests by one-fourth, and it will go far to assure permanence and stability of those industries depending upon the growing, marketing, and use of wood.

These are but a few of the more illuminating facts which the Laboratory's investigations have revealed, but they are considered so significant that the Association of Wood-Using Industries is publishing the report without awaiting its publication by the Government. In the last inning the Laboratory's men will go to the sawmills and into the woods, and there check up the amount of wood not now utilized, but which is suitable for small-dimension stock, provided the manufacturing is done at the sawmills instead of at factories in distant cities.



TELEPHONE PLANT

The accompanying picture is of a peculiar air plant which is often found growing on outdoor lines of insulated wire in Porto Rico. The mass of the plant is above five inches in diameter, and from this nucleus the flower stalks project in all directions. Although frequently found on outdoor, bare, rusty, iron wire, the growth has never been known to grow on copper wire or cable or on new, iron wire. No trouble is ever experienced from the plant as it does not reach a size sufficiently large to cross two wires.—H. E. Zimmerman.

Mention American Forestry—It Helps

PINE BLISTER DISEASE IN EUROPE

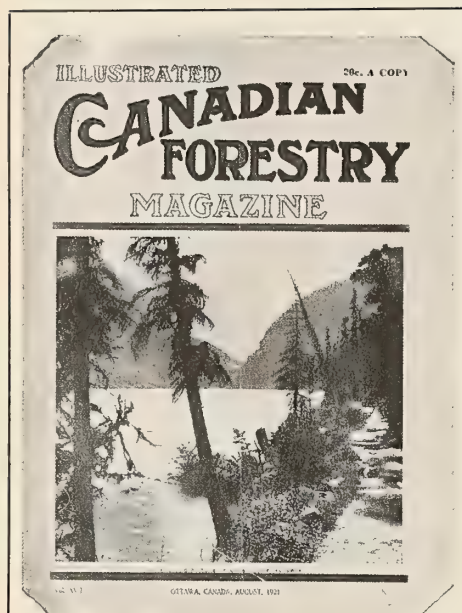
According to Dr. Perley Spaulding, of the United States Department of Agriculture, who recently returned from an eight months' study of blister-rust conditions in Europe, giant white pines in Switzerland, that in 118 years have fought their way to a height of 130 feet and more, are being killed by white-pine blister rust, and no effort is being made to control the spread of the disease.

Dr. Spaulding, who made the trip to determine the extent of damage done to old trees and to seek any new points in the life history of the disease, says that the white-pine blister rust has been known in Switzerland since 1854, but that it has been only within the last 10 years that it has spread to such a state of destructiveness. The urgent necessity of co-operating in the attempt to control the spread of the disease in the United States, he says, will be better realized and facilitated by lumbermen throughout this country when it can be pointed out to them that the disease affects old trees as easily as young seedlings.

"Forest conditions with respect to the white pine are entirely different in Europe from those in the United States," says Doctor Spaulding. "The white pine is not a native in Europe, but is a planted tree there, and is necessarily in scattering plantations, not in more or less continuous forests, like the white pines of America. Hence, although the blister rust has been in Europe for at least 70 years, it has spread more slowly than in America. On account of the ravages of the blister rust, however, planting of the white pine has been almost wholly abandoned in all of northern Europe, although it is a highly desirable and valuable tree.

"Wild currants and gooseberries, which are so common in the northern United States, are comparatively scarce in Europe. On the other hand, the black currant is almost universally cultivated, and this is the most susceptible and dangerous host of blister rust in both Europe and America. In Europe the black currant, together with the other cultivated currants and gooseberries, constitute a crop of greater value than the planted white pine, so there can be in Europe no question of destroying currants to save pines, as we have learned to do in this country.

"There is not the slightest doubt that the largest and oldest trees can and will be killed by the white-pine blister rust," says Doctor Spaulding. "The oldest white-pine trees that I saw in Europe were in Switzerland. These were trees 118 years old, with a diameter of 1½ to 2½ feet. These were killed or being killed by the blister rust. There is not the slightest reason to expect that the much greater size of our western white-pine and sugar pine in Idaho and California will protect them in the least from the ravages of this disease."



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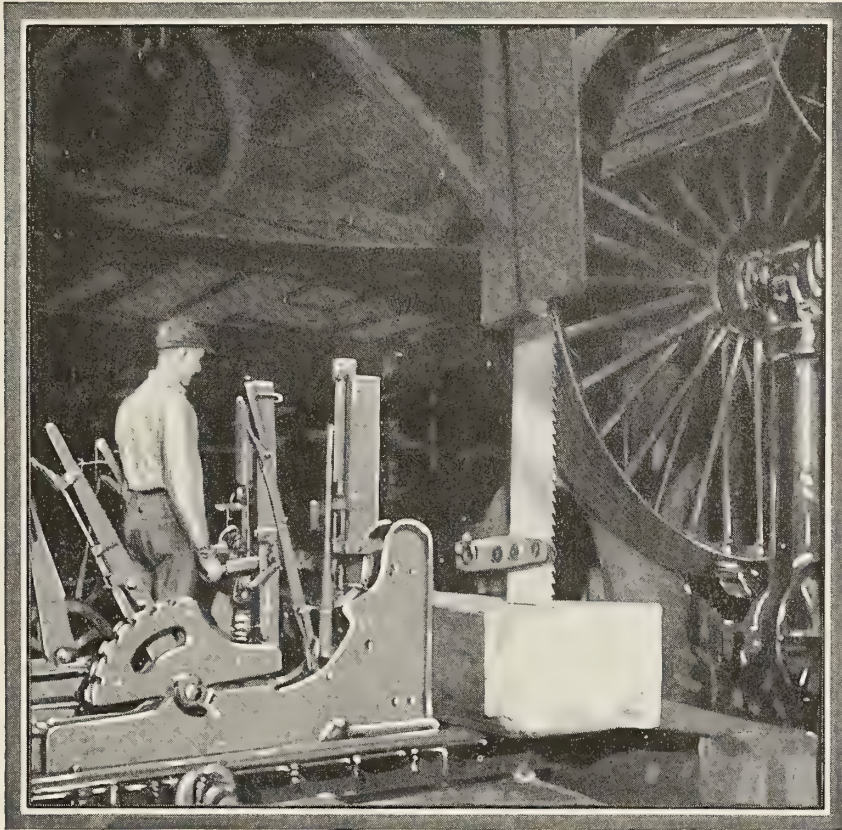
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MINNESOTA ASSOCIATION
RESOLUTIONS

Among the resolutions passed by the Ten Thousand Lakes of Minnesota Association at its recent annual meeting in Duluth were the following:

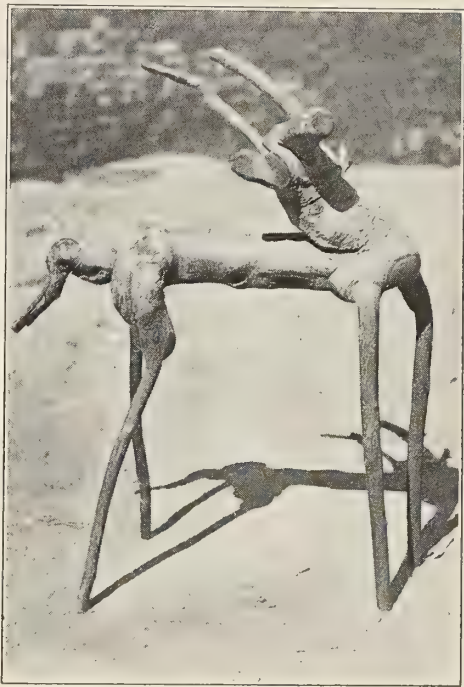
"The Ten Thousand Lakes of Minnesota Association recognizes the fact that the forests of the nation are being very rapidly depleted. It believes that the present generation owes a duty to posterity, in that adequate provision should be made to save and reproduce as much timber as the future may need. It is a self-evident fact that the reproducing of forests is a long-time proposition and the problem of annual taxes is a deterrent to private reforestation. These two (self-evident) facts point to the inevitable conclusion that reforestation is the task and the duty of the Federal and State governments.

"This association believes that the Federal and State governments should definitely pursue, on a much larger scale than heretofore, the policy of conserving, acquiring, and reproducing forests.

"Resolved, That this association strenuously opposes any action to open to settlement the Minnesota National Forest and maintains that it should be held intact.

"The Ten Thousand Lakes of Minnesota Association deprecates any agitation which aims at the opening for settlement of any lands heretofore segregated for reforestation, whether by the State or National government, and submits that reforestation in Minnesota has proven not only feasible, but highly successful, and that tree crops are as important and valuable as any other crops. So many millions of acres of wild lands are yet available for settlement at such

moderate prices that there is no need of encroaching upon reforestation projects for lands for settlement. This association favors the establishment of forest fire patrol by airplane as an aid to rangers in preserving our forests from fire.



CURIOUS DEER ROOT

The curious-looking deer shown in the accompanying photograph is a root which was pulled from the ground by workmen of a construction gang who were clearing the right of way for a railroad through the woods of Wisconsin. It was thrown to one side, and later one of the men saw a resemblance to a deer and took it back to

camp, where the surplus branches were neatly trimmed off. The eyes and nose are knots where the branches were cut off; one ear is large, while the other is in the shape of a small horn. It is about 3 feet high.—*W. F. Hild.*

BRIDGING THE TIME GAP WITH
TREES

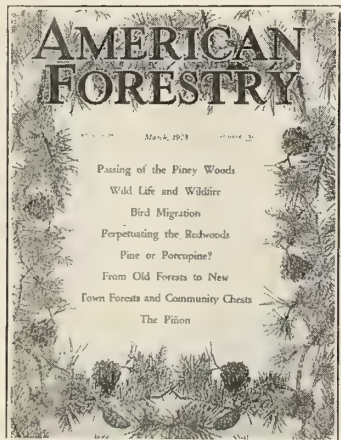
By studying the growth rings in timbers to be found in the cliff dwellings of ancient Indians in Arizona, Colorado, and New Mexico, archæologists hope to establish the date when these prehistoric buildings were erected. According to Neil M. Judd, curator of American Archæology of the U. S. National Museum, an expedition will soon take the field to begin a painstaking investigation to fix the time of this ancient Indian civilization.

Many a mysterious story is buried in the growth rings of trees. Will the trees tell the story of the ancient cliff-dwellers of our Southwest? Archæologists hope so. Working on the theory that variations in the width of tree rings are determined by climatic conditions, they will attempt to trace backward into the dim ages the building of the mysterious cliff-houses which seem to hang from the sheer cliffs.

Bits of evidences of one kind or another are still to be found in these houses, chief of which are old timbers in ceilings and floors. By studying the annual growth of these timbers and making comparisons with the growth of trees still living—old now but young when the cliff-dwellers existed—the scientists are hopeful that they may be able to count backward to a period when the similarity of growth rings will date the life of the cliff-dwellers.

Every tree lover should receive the beautifully illustrated monthly magazine American Forestry. Write to the Office, 914 Fourteenth Street, Washington, D. C., for a sample copy.

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American Forestry's Prize Story Contest

FOR FOREST RANGERS

Men of the State and Federal Forest Services have many interesting and exciting experiences in the line of duty. These experiences are told around the camp-fires or in the ranger's cabins, when the day's work is done. But the public never hears them, because they are not written.

AMERICAN FORESTRY wants to pass some of them on to its readers. It wants the American public to know more about the life of the men who are protecting their State and National Forests. For the best story on the subject:

"MY MOST EXCITING EXPERIENCE AS A FOREST RANGER"

AMERICAN FORESTRY offers the following prizes:

First Prize—A No. 956 Hamilton Watch in 25-year gold case.

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Third Prize—A Comfort Sleeping Pocket, with air mattress and pillow inclosed within a water-proof, felt-lined cover. Weight, 12 pounds.

Fourth Prize—Choice of a bait or fly model Bristol Casting Rod.

Contest closes June 1, 1923. All forest rangers employed by the State and Federal Services are eligible. Rangers should not hesitate to compete because they think they cannot write. This is not a contest for "fine writing." We want you to select what you consider your most exciting experience as a forest ranger and tell it—on paper—in your own way and in your own language. One experience stands out in your mind; it may have been the fighting of a forest fire, the apprehension of a trespasser, the arrest of a game violator, an encounter with a bear, the trailing of a cattle rustler, a mix-up with a sheep-herder, a race with a mountain flood, etc. Whatever it was, sit down and write it out, just as you would tell it to Ranger Bill. Manuscripts should not exceed 1,200 words.

FOR FOREST RANGERS' WIVES

Woman's part in the saving of American forests is an unwritten story, of which the outside world knows little or nothing. The city dweller looks upon the life of a forest ranger as a more or less romantic career, but he has no conception or appreciation of the life of a forest ranger's wife or the contributions she is making to the preservation of the nation's forests.

Her problems, her pleasures, her hardships, her loneliness, the conditions under which she must often live and rear a family, the ways in which she helps her husband with his forest work, what she enjoys most in the forest life—these things are all vital human elements in America's forest movement. The public should be interested, and it is interested, but it doesn't know about the ranger's wife.

AMERICAN FORESTRY wants to be the medium through which the wives of forest rangers may tell of their lives and experiences and the part they are playing in this great forest struggle. For the best manuscript on the subject:

"THE FOREST RANGER'S WIFE"

AMERICAN FORESTRY will award the following:

First Prize—Fifty Dollars.

Second Prize—Thirty-five Dollars.

Third Prize—Twenty-five Dollars.

Fourth Prize—Fifteen Dollars.

The contest is open to all women who are wives of forest rangers in the State and Federal Forest Services. Manuscripts should not exceed 2,500 words. Where photographs, illustrating any phases of the life of the ranger's wife or the conditions under which she lives, are available, they should accompany manuscript.

THE FOLLOWING INSTRUCTIONS APPLY TO BOTH CONTESTS

1. Stories must be based on actual experiences relating to work or life as a forest ranger or as a forest ranger's wife.
2. Manuscripts may be written in long hand or on the typewriter, but one side of the paper only should be used.
3. If possible, accompany manuscript with several photographs showing striking activities of forest life. These need not bear directly upon your story, but if they do, so much the better.
4. Write name and address plainly on the manuscript and mail it to AMERICAN FORESTRY, 914 14th St. N. W., Washington, D. C., so that it will arrive before June 1, 1923. Mark "Ranger Story Contest" in lower left-hand corner of envelope.

Manuscripts which do not win prizes will be considered for later publication in AMERICAN FORESTRY, but unaccepted manuscripts will not be returned unless accompanied by return postage.

THE BLAZED TRAIL OF FOREST DEPLETION

By HON. GIFFORD PINCHOT, Governor of Pennsylvania

Will appear in the May, 1923, issue of the AMERICAN FORESTRY magazine.

National interest always attaches to Mr. Pinchot's views on conservation. His name, like his life, has long led the public movement to protect American forests. First as Chief Forester of the U. S. Forest Service and later as Commissioner of Forestry of Pennsylvania, his leadership has been characterized by fearless independence. And now, as the new Governor of Pennsylvania, his opinions on our forest situation will be of even greater public interest.

This will be the fifth of a series of special articles which began in the January, 1923, issue of the American Forestry Magazine.

The remaining articles of the series which will follow are:

June—"The Long Haul from the Woods," by Earl H. Clapp

July—"The Land Cry Against the Forest," by P. S. Lovejoy

August—"The Farm and the Forest," by Henry S. Graves

December—"Balancing the Forest Ledger," by William B. Greeley

Sept.—"Wild Followers of the Forest," by Aldo Leopold

October—"The Forests of the World," by Raphael Zon

Nov.—"The Coming War for Wood," by Howard F. Weiss

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New York's Beaver Problem

[Continued from page 203]

prove the most effective means of solving the problem; yet nothing was done except as previously stated. Beavers kept on increasing, with progressive damage to timber and property, safe in the protecting hand of the law.

In its annual report for 1922, the Commission again recognizes that the problem must be met, saying: "The only practicable remedy is, in our judgment, the creation of an open season, during which it shall be lawful to hunt and trap beavers and sell the skins." In this way it proposes to allow some remuneration for those who have had to suffer the inconvenience and financial loss caused by the State's own policy.

In providing for an open season, it will be necessary that certain restrictions be laid down, to prevent wholesale killing, which might lead to extermination. The Commission suggests that it be "given authority to designate the places where beaver may be taken, and to close the season entirely where such action is deemed advisable." It might also be necessary to place a strict limit on the number of beavers that any person might take during a season.

In view of the constantly increasing damage that is being done to our Adirondack forests, not to mention the irreparable injury to the scenic value of lakes and streams, that can never be estimated, the State must pass a law providing for an open season on beavers. Such a law is the only effective way to handle a problem that threatens the potential value and beauty of our natural forest resources.

[Photographs by courtesy of the New York State Conservation Commission, Mr. D. Lange, U. S. Biological Survey, and the Wisconsin State Conservation Commission.]

THE FIRST STATE FORESTRY ASSOCIATION

The first State forestry association in this country was established at Utica, New York, in 1885, according to the *Seed Tree*, Theodore Roosevelt presiding as chairman over the organization meeting. Although New York was even then beginning to decline as a timber-producing State, the rank and file of citizens were unable to comprehend the meaning or ultimate results of forest depletion. The first State forestry association succeeded only in fixing an idea, but it led eventually to organization, in New York and other States, of intelligent forces behind conservation.

The New York State Forestry Association of today was organized in 1913, incorporated in 1914, and will celebrate its tenth anniversary this year.

A PRIZE CONTEST

The Lehigh Coal and Navigation Company, of Pennsylvania, is conducting a prize contest open to public school children in the territory extending from East Mauch Chunk to Tamaqua, the main object of the contest being to arouse greater interest in the protection of forests from fire, and to obtain a forest fire slogan that will cause the general public to use greater care with fire in or near the woods. Two Grand Prizes are offered, of \$20 and \$15 respectively, and there are in addition District Prizes, the first District Prize being \$5 and the second one year's subscription to AMERICAN FORESTRY magazine. Prizes will be awarded April 30.

It will be recalled that the Lehigh Coal and Navigation Company was one of the first coal companies to undertake a reforestation project, this being put into effect in Carbon and Schuylkill counties, and their results amply justify their pioneering in this field. As early as 1913 a sound conservation policy was inaugurated by the company. They started an intensive program, employing forest rangers, after a plan similar to that of the State Forestry Department, installed proper spark arresters on all locomotives owned by the company and its subsidiaries operating in this section, and cut barriers to aid in rapid transportation of labor to fires.

\$4,000,000 FIRE DAMAGE IN CALIFORNIA

Fires on the National Forests of California have in the ten years ending in 1920 burned over 1,300,000 acres, causing nearly \$4,000,000 damage, according to a circular issued by the Forest Service, based on a study of more than 10,000 fires, most of which were man-caused.

Data compiled on such an exhaustive analysis of fires by causes, size, damage, cost, location, season, and other relating factors, and the drawing of conclusions as to the best methods of preventing and fighting fires, will prove interesting and helpful to every one connected with forest protection, not only in California but elsewhere, especially throughout the West. It contains valuable information as to the various theories and principles that have been tested out, both in patrol and actual suppression, leading to a selection of means and methods that have proved most effective.

The circular is replete with statistical data and graphic illustrations pertaining to every phase of the forest-fire problem. It may be had free on application to the United States Department of Agriculture, Washington, D. C., requesting Department Circular 243, Forest Fires in California, 1911-1920.

"AMERICAN FORESTRY for January is very interesting."—Lewis E. Theiss.

THE EAGLE 1923 TOUR

A preliminary announcement has been made regarding the 1923 Alaska Tour because *The Eagle* is receiving so many inquiries. Ever since the acquisition by the Government of Mount McKinley National Park, on the line of the new Government railroad in Alaska, the National Park Service has had in mind an invitation to the *Brooklyn Daily Eagle* to organize a party to dedicate this park. The completion of the railroad from Seward to Fairbanks and the development of other tourist facilities now makes it possible to handle a party of sixty in comparative comfort on a comprehensive journey to the interior of American Alaska.

Accordingly *The Eagle* is planning a unique journey, covering not only the Inside Passage to Skagway, but continuing on to the rarely visited ports of Cordova, Valdez, Latouche, and Seward. *The Eagle* party will disembark at this point and will inaugurate tourist party service on the Alaska Railroad. The Government authorities have agreed to provide a special train of tourist sleepers and buffet car for a three-day journey over the entire line to Fairbanks, with stops for the dedication of Mount McKinley Park and at various points of interest en route.

The journey out from Fairbanks is to be made in motor cars over the Richardson Highway to Chitina, from which point a special train will carry the party to Cordova, the port of the embarkation for the homeward journey. The new steamship *Alaska*, of the Alaska Steamship Company, will carry the party northbound and the steamship *Alameda*, of the same company, will provide for the return journey. The best accommodations on both vessels have been reserved for *The Eagle* party.

The return journey from Seattle will probably take in such scenic features as are to be found near Seattle and Portland, the Columbia River Highway, interesting points in the Rockies, the Frontier Days Celebration at Cheyenne, and will include brief stops at Omaha, Chicago, and Niagara Falls. The entire itinerary will be so arranged as to provide some interesting side trip, drive, or special excursion on nearly every one of the forty days the party spends en route.

The date of departure from New York is June 22; the return is scheduled for July 31. The cost of the trip will be somewhere around \$950. As usual with *Eagle* Tours, the amount, when fixed, will be absolutely inclusive. *The Eagle* Special on the trans-continental journeys will include Pullman compartment and drawing-room cars, observation car, assembly car, baggage car, and dining car.

"The new policy of the Association certainly pleases me."—Gayle H. Somers.

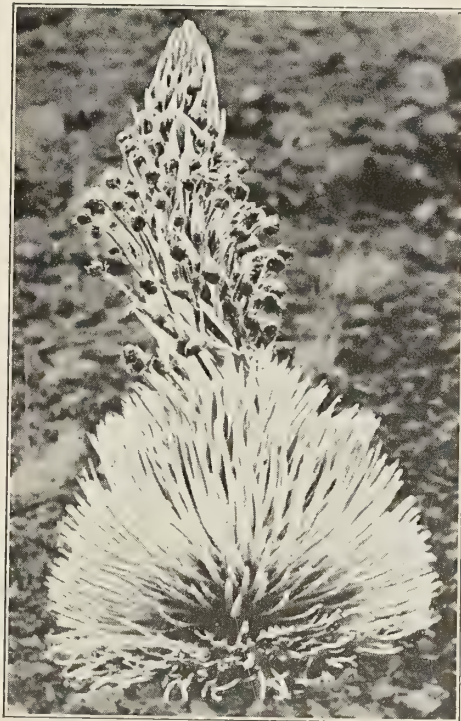
Holding the Banks of the Mississippi

[Continued from page 243]

trees were in a perfect state of preservation; they were absolutely sound."

In the utilization of trees for flood prevention, the thoughtful observer cannot fail to perceive the eternal fitness of things. The relationship between the forests and streamflow is well established. Deforestation of the regions watered by the Mississippi and its tributaries has been a factor in the recurrent floods, and the use of trees for protection appeals to the imagination.

Of similar interest, and even greater importance, is the appeal to the sense of reason as involving the whole general subject of reforestation. The clearing of the forests has materially affected the distribution of the annual rainfall of the tributary regions. It is clearly established that forests absorb water during flood periods, and that this water percolates through the ground and flows from active springs at a later day. By this process the forest plays an important rôle in reducing flood heights and increasing the low-water flow of rivers. The flood troubles of the Mississippi Valley give added force to the arguments for reforestation on a widespread scale.



RARE PLANT

One of the most curious plants in the world and one of the greatest interest to all botanists is the "Silver Sword." This very rare plant, with its magnificent silver spines and handsome crest, is found in the upper part of Kaupo Gap, the southern outlet of the vast extinct crater of Haleakala, on the island of Maui. It flowers from July to October and is found nowhere else in the world.—H. E. ZIMMERMAN.

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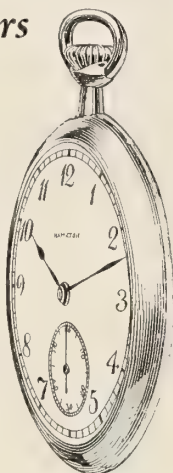
For Foresters the Hamilton 16-size, number 974, is ideal. Ask your jeweler to show you this model—priced at \$25 for the movement alone. Case extra.

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Farming the Forest for a Pine Crop

[Continued from page 198]

white-pine blister rust. If the door had been locked twenty years ago, the white-pine grower would not have to bother about blister rust. In other words, if a quarantine law had prevented the importation of white-pine planting stock from Europe back in the late '90's, as it does now, the blister rust would probably have been kept out of the United States. However, this was not done, and the disease has already spread over New England and New York with alarming rapidity. It has also become established in Wisconsin and Minnesota, and recently was found in British Columbia and western Washington.

The fungous parasite that causes this disease is a sly customer. It works into the bark of the unfortunate pine tree and hides there for several years. Finally, it swells up with its own importance and, during the spring before ultimately killing the tree, all its wickedness bursts through the bark in the form of orange-yellow blisters about the size of a navy bean. These blisters contain dust-like spores by which the disease spreads. They are scattered by the wind, and right here is the curious thing in the life of the disease that makes its control possible. After leaving the pine, the blister-rust spores go off on a little summer vacation, visiting neighboring currant and gooseberry bushes for a while and causing a rust to grow on the under side of their leaves.

These new rust spores, when blown to the pine trees, cause fatal infection, but they are so delicate that they seldom live long enough to reach and infect pines growing over 900 feet from the diseased bushes. In taking this little jaunt to the leaves of the currants and gooseberries, the blister rust provides an easy means for rendering it powerless to harm the pines. Simply destroy all the wild and cultivated currants and gooseberries within nine hundred feet of the white pines and the blister rust will be unable to harm them materially. However, when the disease once takes hold of a young pine tree, that tree, in most cases, is doomed.

Growers of white pine should destroy all currant and gooseberry bushes, both wild and cultivated, in the vicinity of their trees. This causes a considerable hardship in some localities, where they have a particular fondness for gooseberry pie or currant jelly; but in the aggregate the value of the white pine saved from destruction far exceeds the value of the cultivated currants and gooseberries in pine-growing regions. It means careful, systematic work to find and uproot the wild currant and gooseberry plants that are nearly always present in white-pine woodlots, but it is not impossible or impracticable.

The costs will vary from five cents to

\$1.50 an acre, depending upon field conditions and the number of bushes that have to be destroyed. The average cost of protecting pine on 1,025,384 acres in the Northeastern States during the past four years was 35 cents per acre. However, once thoroughly accomplished, the pines are safe for at least five to ten years, and the added cost of protection from the blister rust is sufficiently low to make raising a white-pine crop a profitable business.

THE THREAT OF THE GIPSY MOTH

One year the gipsy moths of Massachusetts advanced 25 miles westward, and in three years they have progressed from the Connecticut River Valley to within sight of the Hudson River valley. In fact, they have approached so closely that the authorities in New York are uncertain as to whether or not the pests have actually crossed into the forests of the Empire State.

Confronted with the history of forest destruction by the gipsy moth, which in New England is immense in spite of the fact that twenty million dollars have been expended in attempting to control it, the authorities in New York have good reason to be alarmed. Especially is such alarm well founded because year after year the great hoards of gipsy moths of New England have been coming closer to the eastern border of New York.

Dr. M. W. Blackman, New York State College of Forestry, Syracuse University, head of the Department of Forest Entomology, a member of the conference on the gipsy-moth situation recently held at Ithaca, states that the result of the conference was the recommendation of an appropriation of \$150,000 to combat this insect. One hundred thousand dollars of this amount is for the Department of Farms and Markets, to be expended in scouting and control work. The appropriation would enable the scientists to establish a dead line from Lake Champlain south along the Hudson River valley to the beginning of the Palisade section, then southeastward into Connecticut.

VOLUNTEER FIRE FIGHTERS

The first volunteer forest fire company to be organized in Pennsylvania has been formed at Mt. Carmel, according to information sent to the Department of Forestry by District Forester Charles E. Baer, of Pottsville. The purpose of this club is to organize and keep in readiness an efficient corps of forest fire fighters, and to further the work of forest fire prevention. The membership comprises twenty-four men, who shall be subject to call to fight forest fires. The new fire company has built a club house, and expects to provide a swimming pool, a tennis court, and trap-shooting grounds for the use of its members.



Reproduction from a painting in oil, by Chas. A. Wilimovsky, of Arbor Lodge, Nebraska City, Neb., home of the late J. Sterling Morton, founder of Arbor Day. The trees on this historic place were treated by Davey Tree Surgeons.

© The D. T. E. Co., Inc., 1923

Among prominent places and persons served by Davey Tree Surgeons are the following:

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MORTIMER SCHIFF
S. DAVIES WARFIELD
MAUDE ADAMS
COLUMBUS COUNTRY CLUB
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JOHN DAVEY
Father of Tree Surgery

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ASSUMING that you are an average tree owner, you have neither the time nor the desire to study in detail the technique and science of saving trees. You have no means of knowing Tree Surgery values, either in correct methods or reliable men. Therefore you must buy Tree Surgery service on faith.

Twenty-two years ago John Davey published his first book, "The Tree Doctor." Then began the slow and conscientious building of the Davey organization. In those early years the business was measured in hundreds and thousands of dollars. In 1922 the business amounted to one million dollars. During the past twenty years more than eighteen thousand clients have been served—more than four hundred thousand trees have been treated and saved. During the same period, many tree men have sprung up, lasted for a while and disappeared. The Davey organization is the only concern that has endured and grown steadily and proven its inbred merit. The law of cause and effect makes this success significant.

The Davey organization is the one safe place to go. You do not need to know anything about trees or Tree Surgery values. Every Davey Tree Surgeon operates according to fixed high standards and under strict discipline—you could not hire or persuade him to give anything but standard Davey Service.

Davey Tree Surgeons are near you—if you live between Boston and Kansas City or California. Write or wire nearest office for examination of your trees without cost or obligation.

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Branch offices with telephone connections: New York, Astor Trust Building, Fifth Avenue and 42nd Street; Boston, Massachusetts Trust Building; Philadelphia, Land Title Building; Baltimore, American Building; Pittsburgh, 331 Fourth Avenue; Buffalo, 110 Franklin Street; Cleveland, Hippodrome Building; Detroit, General Motors Building; Cincinnati, Mercantile Library Building; Chicago, Westminster Building; St. Louis, Arcade Building; Kansas City, Scarritt Building; Los Angeles, Garland Building; Montreal, 252 Laugachitère, West.

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Every real Davey Tree Surgeon is in the employ of The Davey Tree Expert Co., Inc., and the public is cautioned against those falsely representing themselves. An agreement made with the Davey Company and not with an individual is certain evidence of genuineness. Protect yourself from imposters. If any one solicits the care of your trees who is not directly in our employ, and claims to be a Davey man, write headquarters for his record. Save yourself from loss and your trees from harm.

Mention American Forestry—It Helps

ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

FORESTER—Experienced graduate, eight years state forest management, five years' nursery and landscape practice. Agricultural and horticultural training on farm and orchard. Prepared to get results from stock, fruit, or forest. Can teach or practice. Box 4070, care **AMERICAN FORESTRY**, Washington, D. C. (10-12-22)

GRADUATE FORESTER, with six years of both technical and practical experience in all phases of Forest work, is open to change of employment. Best of references can be furnished. Address Box 4075, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

EXPERT TREE SURGEON, also some knowledge of Landscape, wishes position on private estate steady year around. Can handle men. At present employed by a Landscape and Forester Co. Can furnish best references. Address Box 4085, care **AMERICAN FORESTRY**, Washington, D. C.

YOUNG MAN, 21 years old, high school graduate, and at present employed as district school teacher, desires Forestry work with a lumber company or private estate for summer vacation and longer if work is satisfactory. The best of references. Box 4090, care **AMERICAN FORESTRY**, Washington, D. C. (2-4-23)

WANTED, to communicate with party interested in Forestry to act as financial partner in developing some large tract of cheap land, must have sufficient capital, would accept straight salary, large fruit or farm proposition considered. Have made this my life work, and study, short course graduate, several years' experience, logging, road-making, pruning, manager 1,500 acre farm, orchard and forest combined. Address Box 4095, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (2-4-23)

FORESTER—Experienced graduated forester from large middle-west university. Master of Science degree in forestry. A specialist in tree diseases. At present employed in City Forestry work in city of 140,000 inhabitants, but would like change to a larger city. Have had five years of experience in eastern, middle-west, and southern sections of the country. Would prefer southern California. Address Box 5020, care **AMERICAN FORESTRY**, Washington, D. C. (4-6-23)

WANTED

SOLICITOR for reputable Tree Surgery Company, vicinity of New York City. Address Box 5010, care of **AMERICAN FORESTRY**, Washington, D. C. (3-5-23)

WANTED—A Forester with some experience to develop our timberlands in this section (Iowa) and purchase logs and timberlands. A good position for the right man. State age, experience, and previous employment. Address Box 5025, care **AMERICAN FORESTRY**, Washington, D. C. (4-6-23)

MISSOURI FARMERS BENEFIT BY FORESTRY BILL

The farmers of Missouri are more greatly affected by forestry than any other class of the state's citizens, according to William B. Greeley, Forester of the United States Department of Agriculture.

"I am told," writes the Chief Forester, "that opinion among farmers in Missouri as to the desirability of a State policy of forestry is divided. Apparently, there is a misconception as to what the effect of such a policy would be. There are something like 14,000,000 acres of forest land in Missouri, most of which will be more valuable to its owners and to the State if used to grow timber than in any other way. Eight and a half million acres of this land are owned by farmers. The farmers should be more interested in forestry, both as producers and consumers of wood, than any other group of citizens.

"The farmer is by all odds our biggest consumer of wood. Dear lumber is interfering today with agricultural development, with the improvement and equipment of farms, and with the shipment of many farm products to market. Transportation costs play a large part in the present high prices of lumber, and are increasing every year. The average freight bill on home-grown Missouri lumber to points within the State is from \$2 to \$6 per thousand board feet. On lumber from the southern pineries the consumer paid around \$12 for freight in 1920, plus further distributing costs pyramided on this freight. And the imports of southern pine into Missouri in 1920 totaled nearly 465 million feet.

"But in the same year 405 million feet of lumber came to Missouri consumers from Oregon and Washington. On this material \$21 per thousand was paid on freight. It is the necessity of importing lumber from the far Northwest to eke out the waning supplies of southern pine that is tending to send lumber prices up all over the eastern part of the country beyond what they would be if the forests nearer home were able to meet local requirements.

"As owners of forest land, the farmers of Missouri should be able to reap a substantial advantage from this situation. Trees grow fast in Missouri. They are, as a rule, the best crop for land that is too steep, stony, or infertile to pay well under tillage. Within a few years a good growing crop of trees on such land will add materially to the value of the farm. The more the old forests are cut off, the more will young growth go up in value.

"The cut-over forest lands of Missouri are now producing only a fraction of their possible yield. Formerly the Ozark region was a great source of white oak for staves and red cedar for pencils and fence-posts, and even today about one-tenth of the nation's railroad ties and many millions

of mine props come from the Ozarks. Each year the cutters must go farther back to get them. Each year there are less to get. Yet, under intelligent management and protection from fire, these products of the forest can be grown perpetually.

"Iowa has 200,000 acres of forest plantations and Nebraska about an equal amount. These furnish fence-posts in large quantities, fuel, and some lumber for their owners. There is no climatic hindrance to a great increase in forest plantations on the farms in Missouri. It would be one of the most important functions of a State forestry department to encourage the development of such plantations. That is the course followed with very good results in a number of States which have State Foresters.

"Forestry pays. In parts of New England second-growth white pine thirty to forty years old is often worth from \$250 to \$300 an acre. Much of the land on the National Forests earns for the country today from \$2 to \$3 an acre annually. Yet each acre is so cut over that a new forest follows the old. Maryland in 1921 showed an income of about \$2.75 an acre from her farm woodlots. Pennsylvania values her State forests at \$10.88 an acre, and predicts that when restored to full production the well-managed forests of the State will yield a net annual return of \$6 to \$7 per acre.

"Pine from the South will cease to be available for Missouri in large quantities after another ten years. Then the State will have to pay a huge freight bill on its lumber from the west coast. The only remedy is to grow timber at home. Missouri has produced splendid pine. It can grow all that is needed for consumption within the State."

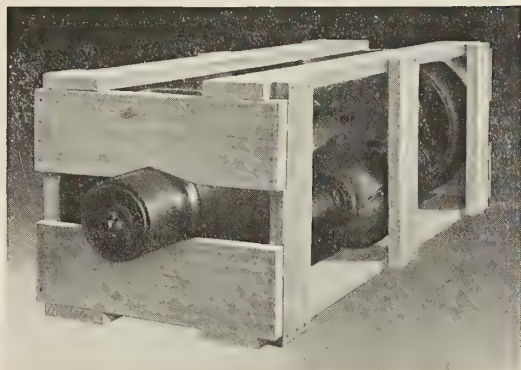
430,000 ACRES ATTACKED BY BARK BEETLE

About 5,000,000,000 board feet of yellow-pine timber in the Happy Camp lava bed region of the Modoc National Forest in California is seriously infested by a destructive bark beetle, according to the United States Forest Service.

A preliminary survey recently completed by the Forest Service shows the area attacked to cover 430,000 acres, of which 145,000 acres is privately owned. The beetles are taking an enormous toll of sound, healthy trees from this area. The report recommends immediate action by the Forest Service and private owners.

The infestation is being brought to the attention of the State Forester of California in the hope of getting State legislation similar to that provided in Oregon, where, in the Klamath Falls region, owners of land are required to contribute to the cost of insect control on their holdings.

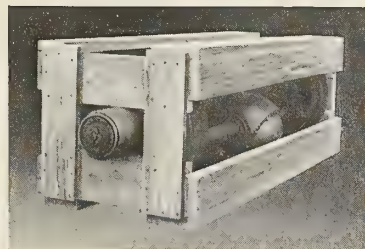
This pest is controlled by stripping the bark and exposing the larvæ to the effects of hot sunlight.



The crate on the left is one of several crates designed for a manufacturer of automotive axles. It takes the place of the crate shown on the right.

The advantages of the new crate are: a marked saving in lumber; a considerable decrease in weight; more rigid construction; prevention of side play; better protection for the drum; lessened labor cost.

A further instance of what Weyerhaeuser Crating Engineers are doing for shippers every day.



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A YEAR'S experience with our special Crating Service has brought out one very significant fact.

It doesn't pay a concern to be too sure that its crating practices cannot be improved.

Some of the most startling savings our Crating Engineers have effected, have been made for concerns who were entirely satisfied with the containers they were using.

A year's work among many industries in many parts of the country has proved that in the great majority of cases our Crating Engineers have been able to build better crates with less lumber. And where savings in lumber have not been possible they have built stronger crates and effected other savings of equal importance.

HERE in brief is the story of the two crates pictured above:

The new crate, designed to carry a 3-ton truck axle, requires 36.3 feet less lumber—a saving of 52%.

It weighs 112 pounds less than the old crate.

These two items represent a saving of \$2.02 per crate.

Labor cost is reduced approximately 50%.

The structural advantages of the new crate over the old one can readily be seen: the lock corner construction makes it stronger and more rigid; the notches in the end members prevent the side play which often weakened the old crate in transit; redesigning of the side members

affords better protection to the brake drum.

Shippers who have adopted scientific crating report other advantages—of perhaps even greater importance than factory savings. It eliminates damage claims and speeds up collections. It decreases sales resistance and so gives the salesman a new selling tool. Safe packing builds good will.

THE services of Weyerhaeuser Crating Engineers are offered to executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of crating lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser Engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 South La Salle Street, Chicago; 220 Broadway, New York; Lexington Building, Baltimore; and 2694 University Ave., St. Paul; and with representatives throughout the country.



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BOOK REVIEWS

THE BOX OF GOD. By Lew Sarett. Henry Holt (New York), \$1.75.

A long poem and a number of shorter ones by the author of "Many, Many Moons." The author's earlier book has established him as the foremost singer of our Red Men. "The Box of God," which has been warmly praised by Marguerite Wilkinson, Carl Sandburg, Louis Untermeyer, and other high authorities, shows us in impressionistic pictures the struggle in the soul of Joe Spruce, an Indian, between his old pagan God of the big windy spaces and the "God who lived in a box" (the Mission chapel) in the wilderness. With pathos and humor we get glimpses of his early life, then vivid pictures of his old God of wild nature in its varying forms and moods.

The shorter poems are in two groups. "On Green Altars" are lyrics of starry nights on the range, poems of winds at timber-line, mesa-mists, forest fires, coyotes, whooping cranes, torrents, blizzards, and whistling pines. In "Red Gods" we have savage war-dances, a quaint sleep-song, council-talks, medicine dances, a maple-sugar prayer, and swinging pagan chants to the Big Spirit of thunder, lightning, rivers, and rains—the Indian's pagan "God who could not be put into a box of logs."

A notable contribution to the world of verse, destined to be read and re-read with ever-fresh enjoyment.

HISTORIC AMERICAN TREES. By Katharine Stanley Nicholson. Frye (New York).

Dedicated to former Governor Sproul, of Pennsylvania, "as a slight token of appreciation of his splendid service in forest conservation," this book is indeed a unique trib-

ute. "Intimately associated as they are in many instances with our National life, as well as with local events, much of the history of America is written in the story of her trees, living or otherwise, and can be traced through a study of the part they have played in connection with its development. Living links in the chain of human interests that spans the centuries, such trees possess an historic value worthy of careful preservation." Beautifully gotten up and filled with interesting accounts of some of the most outstanding of our historic trees, the book will be welcomed by patriots and tree lovers all over the land.

Attractively presented and full of interesting information, the "Seed Tree," a monthly news bulletin of the New York State Forestry Association, makes its bow. The "Seed Tree" supersedes the "Rivet," of which thirteen numbers were published by the association "to help clinch the better-forests idea." The significant name of the new bulletin indicates clearly the purpose it will serve—more power to it in broadcasting the "seed!"

The World Book Company has in press a new text- and hand-book on farm forestry, which was prepared by James B. Berry, formerly in charge of the Forest School at the University of Georgia. The text deals with the treatment of farm woodlands from the economic standpoint and the marketing of farm woodland products. The subject is discussed on the basis of the farm woodland enterprise or project, and is adapted to use in agricultural and vocational schools. However, it serves equally well as a practical hand-book for the use of farmers and estate managers. The book is accompanied by three supplements, dealing with tree and wood identification, entitled respectively "Northern Woodlot Trees," "Southern Woodland Trees," and "Western Forest Trees." Mr. Berry has had several years' experience in State and Federal forestry work, eight years of instructional work in agricultural colleges, and three years' work in the supervision of vocational schools of agriculture. He now holds the position of County Vocational Supervisor of the Pennsylvania State Department of Public Instruction, with headquarters at Meadville, Pennsylvania.

"My interest in forestry is a heritage from my father, Capt. John B. White, and I cannot afford to have AMERICAN FORESTRY, which we have always taken, absent from my reading table."—*Arabell White Hemingway.*

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BLISTER RUST QUARANTINE COVERS STATE OF WASHINGTON

To prevent the spread of the white pine blister rust from Washington into other States, Secretary of Agriculture Wallace has extended Blister Rust Quarantine No. 54 to cover the entire State of Washington. For this purpose the order prohibits the interstate movement out of Washington of five-leaved pines and of currant and gooseberry plants. The extension of the Federal quarantine is necessitated by the promulgation by the Director of Agriculture of Washington of State Quarantine Order No. 12, effective September 1, 1922, and amending State Quarantine Order No. 7, effective March 1, 1922, so as to permit the intrastate movement from licensed and inspected nurseries of all currants (except cultivated black currants) and gooseberries from the territory hitherto under quarantine west of the Cascade Mountains. This action leaves the control now exercised by the State, in the judgment of Secretary Wallace, inadequate to prevent the spread of the white pine blister rust from the infected district west of the Cascade Mountains throughout the State, making it necessary to extend the provisions of the Federal quarantine to the entire State.

The promulgation of Federal Quarantine No. 54, which became effective March 15, 1922, followed the discovery by agents of the United States Department of Agriculture, of several blister rust infestations, principally on black currants in the Puget Sound region of Washington. Much concern is felt over the possibility of the disease spreading to the valuable commercial stand of western white and sugar pine forests of the Rocky Mountains and Pacific coast regions.

THE PAPER INDUSTRIES EXPOSITION

While the American Paper and Pulp Association and its related associations are in session during the week of April 9th to 14th, there is to be held continuously, at the Grand Central Palace, New York, a unique exposition covering the paper industries. Three main groups of exhibits will be featured, telling the whole story of paper, from the forest to the ultimate consumer, the great American public. There will be no rigid classification of exhibits, but they will be arranged in a general way, according to the three chief steps in the progress of manufacture and distribution, the first being the paper-making machinery and the chemicals entering into the manufacture of paper; the second, the making of the paper itself; and the third, the conversion of paper into the thousands of subdivisions in which it reaches the public.

An entire floor of the Grand Central Palace has been set aside for the Exposition, and the space is divided into about 200

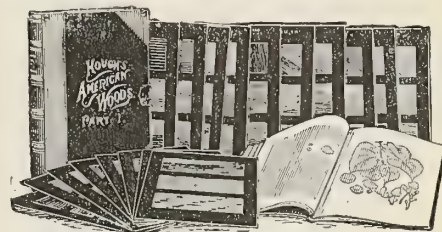
booths. Manufacturers of paper-mill supplies have been prompt to take advantage of this opportunity to present their equipment to the paper-mill executives who will be present at the Exposition. The chief effort of the management of the Exposition, however, has been directed to the securing of educational exhibits rather than the sale of space for commercial exhibits.

A large attendance of manufacturers and merchants during the week is pretty well assured, because the annual conventions of the American Paper and Pulp and National Paper Trade Associations, with their affiliated organizations, will be in session.

Mr. Charles F. Roth, one of the managers of the Exposition, says that the exhibits will be so widely diversified as to make the show a complete picture of the industry, from the raw materials through to the consumer. It will not be a paper-making supplies exposition, neither will it be a show of paper only, but it will be a graphic portrayal, through widely diversified exhibits, of the whole range, from raw materials to consumer, through the manufacturing processes, to the merchandising phase of the industry, and particularly of the use of paper by converters for bags, envelopes, and specialties. It will be complete, and the exhibits already secured assure the telling of the story in a way that will interest not only the business men coming in contact with the industry in its various branches, but the general public as well.

HOUGH'S AMERICAN WOODS

A publication illustrated by actual specimens (showing the end, "quarter" and "flat" grains of each wood) with text telling uses, properties, distributions, etc.



A volume of AMERICAN WOODS open. The plates containing the specimens go with the text into the clasped book-like cover.

HOUGH'S HANDBOOK OF TREES

Is photo-descriptive and enables one to identify all of the trees east of the Rocky Mountains and north of the Gulf States at any season of the year. 891 illustrations.



The HANDBOOK opened at Red Oak. Two pages facing each other are devoted to a species. "Its illustrations almost carry the scent and touch of the original."—*New York Times*.

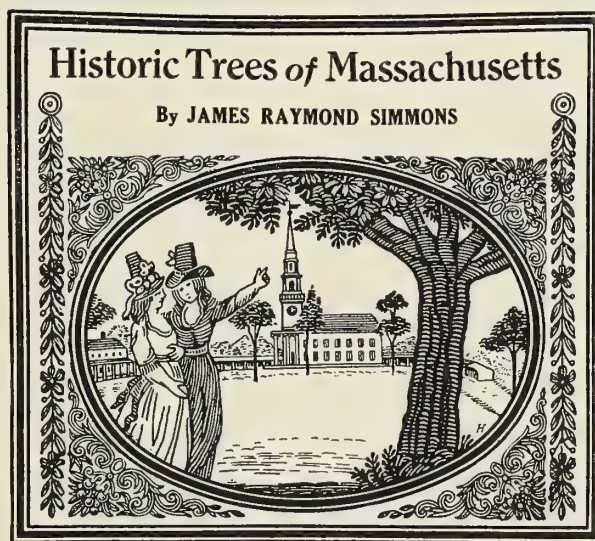
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Trees have ever been connected with human history. Historic trees are those beneath or near which events of continuing interest in the life of State or Nation have occurred. Massachusetts has more of them than any other State in the Union. Some of them were standing before the Pilgrims landed, and still survive. Mr. Simmons describes them all, and shows most of them in the photographs that illustrate the volume.

"The title of the book suggests a topic of purely local interest. In so far as this suggestion militates against the volume, it is unfortunate, for any outdoor enthusiast, any lover of nature, anyone with an affectionate regard for trees, and even the sober historian of America's unromantic development will enjoy the book. The illustrations are clear sepia-toned photographs that delight the eye, and effect an emotional response. It may be whispered that this volume has been listed in trade journals as an example of beautiful bookmaking."—*Chicago Post*.

All Orders to THE AMERICAN FORESTRY ASSOCIATION
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Washington, D. C.

Venezuela's Cow Tree

One of the most curious botanical curiosities of South America is the so-called cow tree, which grows on the broad, barren plateaus of Venezuela.

The sap of this tree resembles milk, both in appearance and taste, and, according to naturalists who have examined it, it is very wholesome and nourishing and not so very different from rich cream, except for a slight balsamic flavor. The tree frequently attains a height of over one hundred feet,

and is often entirely smooth and without a limb for a distance of eighty feet from the ground.

If a hole is bored or any sort of a wound made on this smooth bark, the milk-like fluid will commence to flow and continue for several days, until it coagulates at the mouth of the wound and forms a waxy substance which prevents further flow.—*Canadian Forestry Magazine.*

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Pleasant Things We Hear

"Your January issue is a fine get away. It looks like a real forestry magazine. Your story, 'Our Forest Hunger,' is absolutely the right stuff. It will be read in that form and will get there. 'The Girl Behind the Fire Line' is another. It is tip-top from beginning to end, and I want to congratulate you on the fine start and to wish you every success."—*Allen Chamberlain.*

"Permit me to congratulate you on the splendid make-up and appearance of AMERICAN FORESTRY as it is now published. The articles are teeming with interest and send a forester back into the woods again."—*Fred K. Hoehler.*

"I want to congratulate you on the January issue. I imagine I must be getting balmy, because I sat down yesterday evening and read it through—a thing which I have seldom if ever done with any other magazine, to the best of my knowledge. I have a comforting hunch that you will make the magazine a real power. You have the idea, the enthusiasm, and the knack of reaching the average man. Your 'Forest Hunger' hits 'em where they live."—*Judge Asa K. Owen.*

"AMERICAN FORESTRY, the organ of the American Forestry Association, is admirably edited."—*Columbus Evening Dispatch.*

"All of us up here greatly appreciate what you have done to help out Minnesota and the Lake States in the last few numbers of AMERICAN FORESTRY. The December and January numbers are attracting a good deal of attention, which should react favorably on the magazine and the Association."—*W. T. Cox.*

"I think AMERICAN FORESTRY is one of the finest magazines in print and it is doing a great work."—*Allen E. Fritzman.*

"The January issue of AMERICAN FORESTRY sets a high standard. To my way of thinking, it is the best issue ever brought out. It comes more nearly giving adequate treatment to the subject of forestry than any previous issue, although there has been a steady improvement for several months past. If you can keep up this high standard, a great many people are going to want the magazine."—*William L. Hall.*

"It is a delight to turn the pages of AMERICAN FORESTRY. The January number excels all that have gone before."—*Dr. John T. Faris.*

YOU use the FORESTS—

When you build a HOME.

When you eat a MEAL.

When you read a NEWSPAPER.

When you go CAMPING or HUNTING.

When you drive an AUTOMOBILE.

When you ride on a TRAIN.

When you go to the MOVIE.

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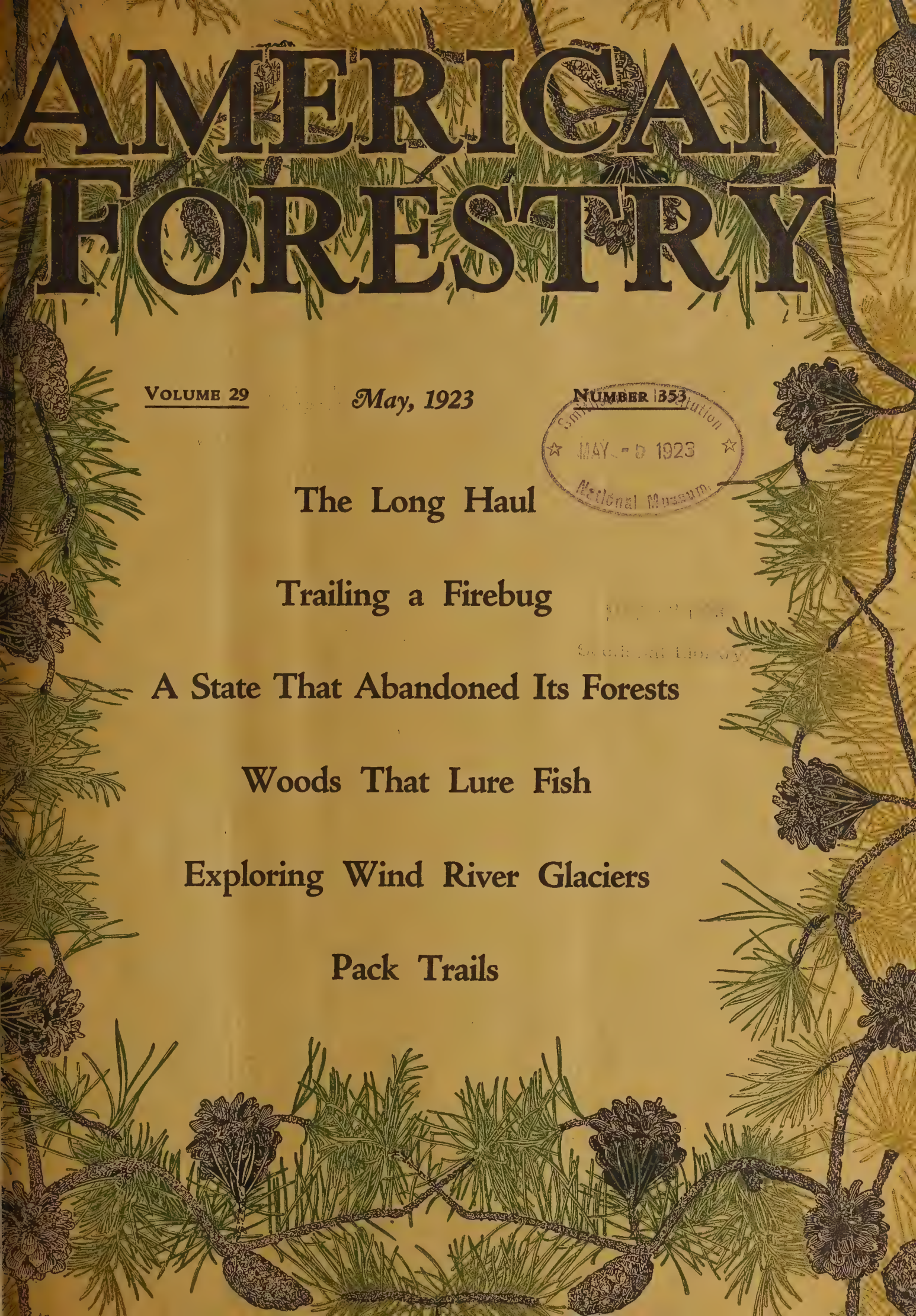
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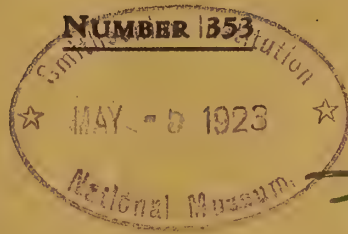


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VOLUME 29

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NUMBER 1353



The Long Haul

Trailing a Firebug

A State That Abandoned Its Forests

Woods That Lure Fish

Exploring Wind River Glaciers

Pack Trails

The American Forestry Association

Washington, D. C.

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IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1919 shows our forests annually supply over two billion dollars' worth of products; employ

755,000 people; pay \$773,000,000 in wages; cover 470,000,000 acres not required for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organizations, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

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Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

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AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

MAY, 1923

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Have you dreamed and dreamed of a cozy little abode 'neath the shade of beautiful trees?

Have you pictured a lovely Arcadia, somewhere, bathed in the sun's ethereal light?

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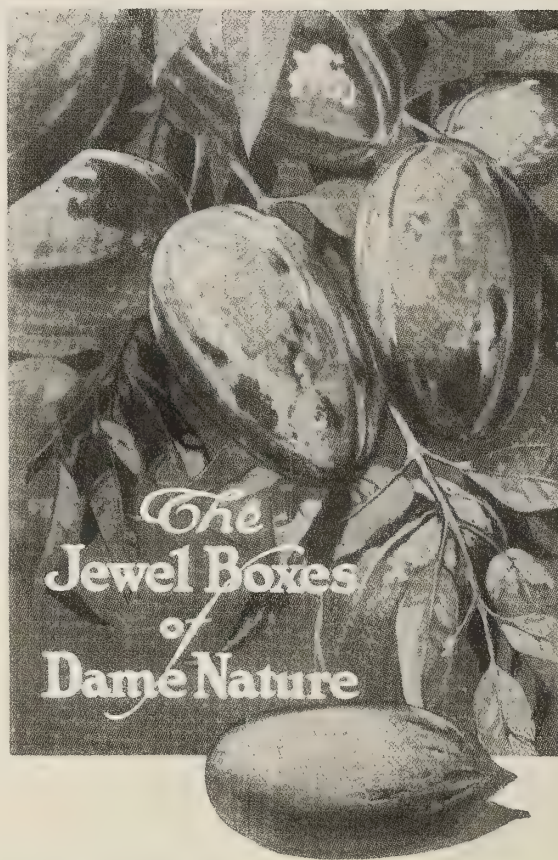
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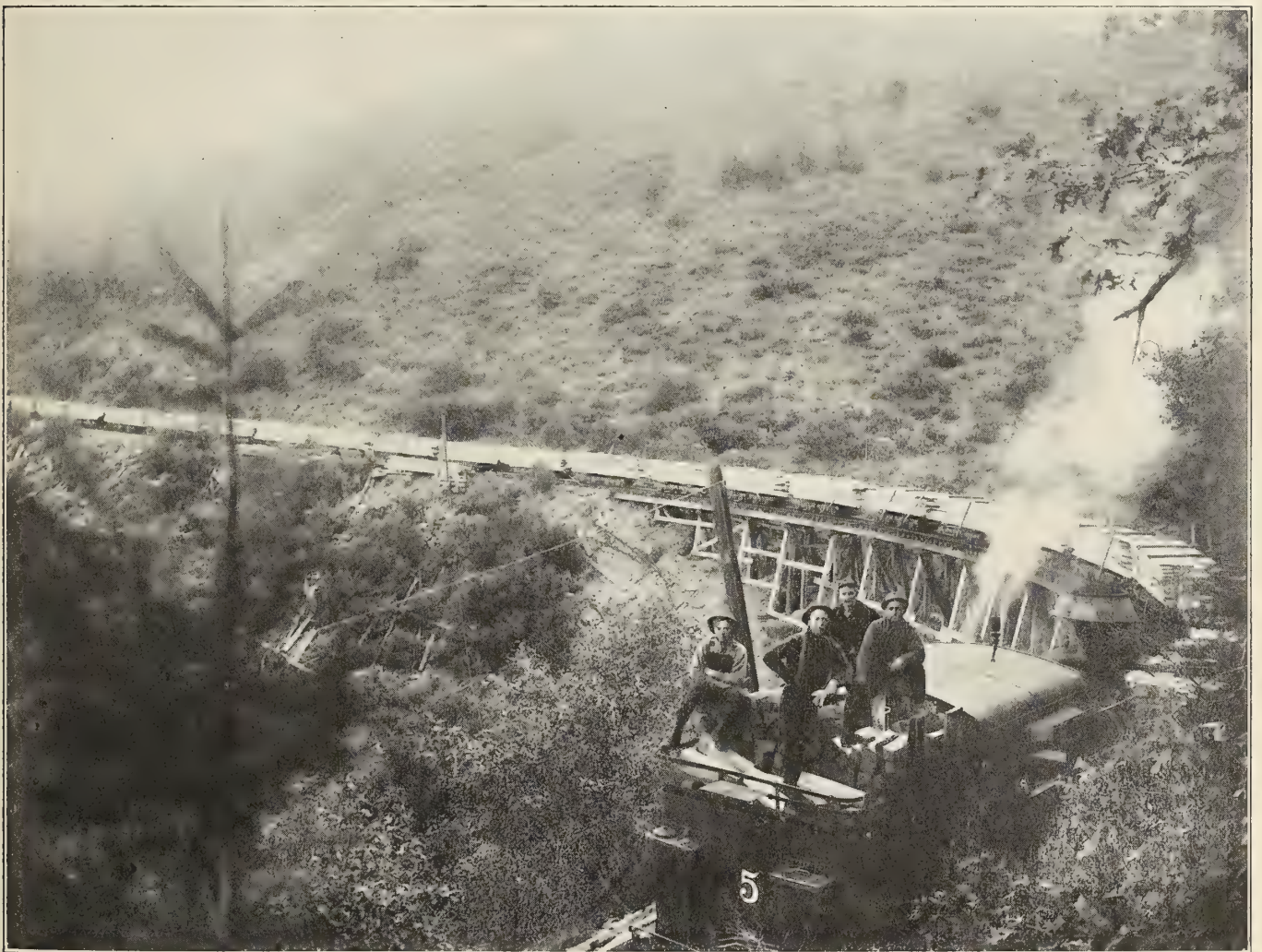
The Long Haul From the Woods

By EARLE H. CLAPP

LUMBER was one of the few products which the English colonies in America were able to supply to the mother country. The freight on one cargo from Maine in 1714 was \$20 per thousand board feet, at a time when in the New England markets lumber was selling for around \$5 a thousand. To cover purchase price and freight alone, it must, therefore, have sold in Great Britain for at least five times the price which the colonists had to pay. Lumber also was no inconsiderable part of the early traffic on the Mississippi River. A purchaser in New Orleans paid \$40 a thousand in 1806 for Pennsylvania white pine, a price low enough under pres-

ent-day standards, but very high in comparison with the \$10 to \$15 which consumers in Pennsylvania paid at the same time. The long haul across the Atlantic in one case and that down the Mississippi in the other was responsible for multiplying several times the price of the product to the final consumer.

The long lumber hauls of early days were, however, the exception rather than the rule, and it is only within the last few decades that for the people of the United States in general the cost of lumber transportation has been an item of major importance. The development of the lumber haul falls logically into two rather distinct



(Photograph by Erickson, Courtesy National Lumber Manufacturers Association)

PACIFIC COAST LUMBER ON THE WAY FROM THE SAWMILL TO THE MAIN-LINE RAILROAD--THE BEGINNING OF THE LONG HAUL ACROSS THE CONTINENT FOR WHICH THE CONSUMER NOW PAYS \$25 A THOUSAND BOARD FEET RAILROAD FREIGHT IN DIRECT CHARGES AND TWICE AS MUCH OR MORE INDIRECTLY

periods or phases. In the first, local and later regional shortages resulting from forest depletion were met by the gradual development of transportation and shipments from other timber regions. These local shortages began even in early colonial days, and have since grown gradually in extent. After the Civil War entire regions began to be affected, and now practically every consumer in the United States is concerned.

This first period has lasted nearly 300 years only because of the enormous quantity and wide distribution of the virgin supplies and the great development of transportation facilities. Transportation coastwise, by river, lake, and rail, has been almost as much a key to the situation as the timber itself. Virgin timber supplies and relatively cheap hauls explain in large part the non-use of some 80 million acres of cut or burned-over forest lands. For well towards three centuries they lulled us into a false sense of security. They have postponed almost to the present day a national awakening to the real character of our timber situation.

Out of the first period has gradually emerged a second, in which the distance between lumber manufacturer and consumer has become so excessive and the long haul has become so heavy an economic burden that it is not only becoming feasible, but profitable, to grow timber locally in competition with distant virgin stands. This is because a large part of the freight charge can instead and with benefit to all concerned, be paid as stumpage to the man who grows the timber near its market.

Until the Civil War, the common long lumber hauls in the United States are fairly well represented by those from Maine to Boston, from the upper Hudson to New York City, and the upper Delaware and Susquehanna to Philadelphia, all water-borne traffic, because no other was feasible, even to these distances, without excessive costs. Distances were from 200 to 400 miles.

Although little information is available on the cost of early shipments, it is certain that they were low. Lumber prices in New England prior to 1740 averaged less than \$5.50, and from that date to 1765 only approximately \$8 a thousand board feet. New York and Pennsylvania prices prior to 1765 averaged around \$10 or less. Obviously, after allowing for logging and manufacture, this left a very small margin for the cost of transportation. Even during the period between 1840 and 1860 the price of average grade softwood boards in eastern markets was only about \$10.50.

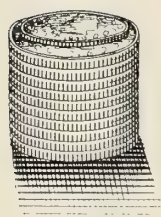
Eighty per cent of the entire lumber cut has been taken from the forest since 1870, when the production was only about 12¾ billion feet. The great increase in lumber production, and hence in lumber transportation, has gone along with the phenomenal industrial development of which we were on the threshold at the beginning of the Civil War—a development made possible by an abundant and easily accessible supply of virgin forests.

THE BEGINNING OF THE LONG HAUL

With the ever-growing demand for lumber and the exhaustion of eastern forests following the Civil War, white-pine lumbering in the Lake States, making full use of exceptional facilities offered by the Lakes, the Erie Canal and Hudson, and the Mississippi River for cheap transportation, marked the real beginning of the long lumber haul in the United States. From Saginaw to New York lumber traveled 1,000 miles, about the minimum distance to the coast, and even to supply many of the rapidly expanding middle western markets Michigan,

HOW THE LONG HAUL HAS INCREASED OUR LUMBER BILLS

This chart illustrates with unpleasant impressiveness the extent to which the increasingly long haul from the forest, forced upon the American consumer by a constantly receding timber frontier, is stacking the lumber dollars against him. America's terrific consumption of wood during the past half century has, through regional forest exhaustion without forest renewal, lengthened the freight haul on lumber to eastern markets from a few hundred to as much as 7,000 miles. Wholesale lumber prices (unit, one thousand feet) in eastern markets are here compared.



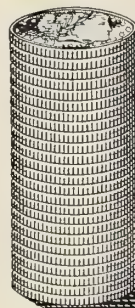
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Price of lumber, 1840 to 1860. Markets supplied by local pine on short haul. Freight, \$1 to \$2.



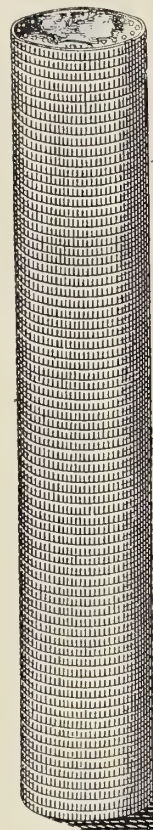
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Depletion of eastern forests forced 1,000-mile haul for Lake States pine, 1866 to 1900. Freight, \$3 to \$7.



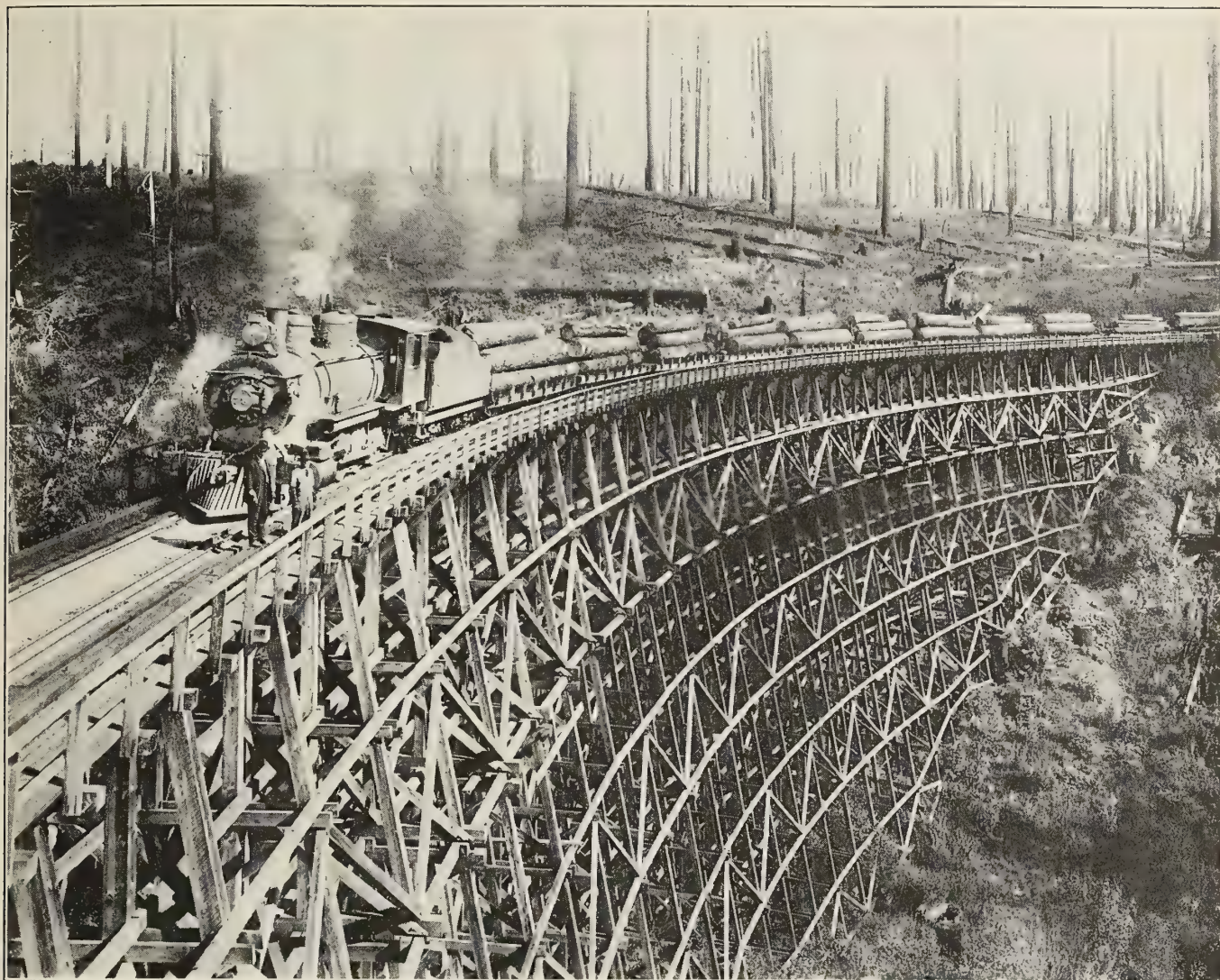
\$25.00

Exhaustion of Lake States pine lengthened the haul to southern pine, 1900 to 1915. Freight cost, \$6 to \$12.



\$75.00

The long haul of 1920. Southern pine and Pacific Coast fir, 1,000 to 7,000 miles distant. Freight, \$15 to \$25.



A LOGGING OPERATION FAR DISTANT FROM REGIONS OF CONSUMPTION. THE LONGER AND MORE EXTENSIVE THE HAUL FROM THE WOODS, THE MORE WASTEFUL THE UTILIZATION OF POORER LOGS, LOWER LUMBER GRADES, INFERIOR SPECIES, AND SUCH PRODUCTS AS POSTS AND FUELWOOD BECOMES

and later Wisconsin and Minnesota, pine moved more than 500 miles, this in contrast with the 200 to 400 miles which characterized the long haul prior to the Civil War.

When it became necessary, following 1890, to draw upon southern pine to meet still expanding middle western and eastern lumber markets, which the Lake States pine could no longer supply, both rail and water routes between the sawmill and the lumber consumer lengthened still further. From Savannah, representative of the southern Atlantic, and Mobile, of the Gulf Coast, distances to New York City were 800 and 1,900 miles respectively. Rail shipments, aside from purely local use, commonly ranged from 750 miles upward, and those exceeding 1,000 miles were common.

But even these distances were short compared with those from the Douglas fir and western yellow and sugar pine stands of the west coast, to which the rich agricultural regions and the voracious industrial centers of the Middle West and East are more and more being forced to turn for lumber. The rail haul from Portland to the Middle West is 2,000 miles or more, and that to the Atlantic coast 3,000, while the waterroute through the

Panama Canal is 7,000 miles between Puget Sound and New York.

This increase in length of haul from the few miles by wagon or sleigh or the 200 miles by water of colonial days to the present 3,000-mile rail haul and 7,000-mile water haul between the Pacific and Atlantic coasts could have only one effect on costs. Lumber transportation, which during early days cost only \$1 to \$2 a thousand feet, is now costing, in many cases, as much as \$25 a thousand and more. For each center of large consumption the increase has come by successive steps, as lumbering operations have been forced by forest depletion to more and more distant regions. With these increases in transportation distances and costs have inevitably come also corresponding increases in the prices of lumber.

FREIGHT ADDS \$250,000,000 TO LUMBER PRICES

The effects of regional shifts in sources of supply upon transportation costs and resulting lumber prices are indeed strikingly clear-cut. The wholesale price of average grade softwood boards in eastern markets between 1840 and 1860 averaged about \$10.50 a thousand feet. This

was a period of relatively short hauls, where the cost of transportation probably ranged around \$1 to \$2 per thousand board feet. After the Civil War, however, when New York and the eastern markets became increasingly dependent upon Lake States pine, lumber prices rose and held roughly at \$16 from 1866 to 1900. The increase was about equal to the increase of \$3 to \$7 in freight costs.

After 1900 southern pine lumber rapidly replaced Lake States pine in the eastern markets. A new price level, averaging about \$25, was the result, and this held until the beginning of the World War, when shipments from the Pacific coast began in volume and the general inflation increased the freight cost still further. Schooner shipments of lumber from the southern ports to New York, for example, ranged from about \$6 in the case of Savannah to about \$7 for such Gulf ports as Mobile. Rail

paying only \$1 freight per thousand feet or less upon lumber cargoes and a maximum of \$2.50 to \$3. Southern pine to the Chicago market from such a point of shipment as Hattiesburg, in the years following 1900, paid the railroads approximately \$8 per thousand feet, and the common boards which replaced the white pine of similar grade sold at prices ranging from \$20 to \$25.

If further evidence were needed, economists have furnished still another measure of the effect of lumber freight upon lumber prices. The Bureau of Labor Statistics of the Department of Labor has compiled all commodity prices for 1840 to the present. When the all-commodity average for 1840 and the price of softwood lumber of average quality in eastern markets for the same year are taken at 100 per cent, a comparison of changes throughout the subsequent years shows that lumber values and all



(Photograph by Erickson, Courtesy National Lumber Manufacturers Association)

EN ROUTE TO THE MILL AT TIDEWATER ON THE PACIFIC COAST, FROM WHICH THE LUMBER OFTEN TRAVELS 3,000 MILES BY RAIL OR 7,000 MILES BY WATER TO THE FARMS AND CITIES ON THE ATLANTIC

rates to New York were about \$12 from such points of manufacture as Hattiesburg, Mississippi. Here again increased transportation costs from a more distant lumber manufacturing region were immediately reflected in higher levels of lumber prices. Softwood prices in eastern markets have not stabilized since the World War; but, with water rates from the Pacific coast now averaging \$15 or more and rail rates averaging about \$25, there is good reason to doubt if prices will again fall to the level which obtained between 1900 and 1914.

One more example from the Middle West makes still more conclusive the effect on lumber price levels of increasing transportation costs. Until a scant 25 years ago the Chicago market held the advantage accruing from essentially local timber supplies and low lake transportation or corresponding low competitive rates by rail. Retail prices in the Chicago market on rough white pine boards varied mostly between the now inconceivably low prices of \$10 and \$13 per thousand board feet; but throughout this entire period the Chicago consumer was

commodity values held together very closely only until about 1865. Since that date lumber prices have increased more rapidly.

Strikingly enough, the only period during which lumber and all-commodity prices held closely together was that in which eastern markets were supplied by local lumber-producing regions with a short and inexpensive haul. With the advent of Lake States pine subsequent to the Civil War, lumber prices were higher than the prices paid for all-commodities, the difference for the period 1870 to 1900 averaging about 70 per cent. During the dominance of southern pine lumber in eastern markets, values separate still further, and between 1900 and 1914 lumber averaged about 140 per cent higher. The 1915 dollar purchased as much of all-commodities as in 1840, but it required \$2.34 to purchase as much lumber as did \$1 in 1840. The difference following the coming of Douglas fir is still more pronounced. Lumber which cost \$100 in 1840 cost \$510 in 1921, while all-commodities which cost \$100 in 1840 could be bought for \$143 in 1921.



(Courtesy National Lumber Manufacturers Association)

LUMBER REALLY STARTS ON ITS LONG JOURNEY FROM WOODS TO MARKET WHEN THE TREE IS FELLED AND THE LOGS HAULED TO THE SAWMILL. THIS FIRST LAP GROWS MORE COSTLY AS THE FOREST BECOMES MORE DISTANT FROM THE SAWMILL. HERE ARE THREE CALIFORNIA PINE LOGS LEAVING THE WOODS EN ROUTE FOR THE SAW

The total lumber freight bill was very small throughout a long period of colonial and early Federal history. It has grown rapidly, particularly with the cutting of the Lake States and southern pine, and the increases in distances and in freight tariffs since 1907, when the lumber cut reached its crest, have been more than enough to offset the reduction in cut. For 1920 the lumber freight bill aggregated about \$250,000,000, more than 90 per cent of which was paid for railroad transportation. This was for lumber alone, a product which constitutes only 37 per cent of the total cut from our forest. While many of the other forest products enter much less into traffic, the total bill for all products was considerably larger.

HAULING COSTS MULTIPLIED TO THE CONSUMER

Unfortunately, however, the freight on each thousand feet and the total freight bill on lumber no longer tell the whole story. Vertical grain Douglas fir flooring during the month of August, 1922, paid a freight of \$12.50 to Minneapolis, where the retail price exceeded the average retail price of Portland, Seattle, and Bellingham, Washington, during the same month by \$28. Flooring of the same grade paid a freight of \$18 to Boston, but sold retail at an increase of \$40 over

the retail price in the Northwest. In other words, the cost of lumber transportation was more than doubled in the final retail price to the consumer. To the retail dealer freight is merely one item of cost, and, since he ordinarily figures profit on a percentage basis, higher freights increase profits, and hence prices accordingly.

But the retail lumber dealer is only a single instance of a long series in which the cost of transportation is multiplied. For example, in furniture-making the manufacturer tries to secure a profit on his costs. The furniture dealer commonly adds 100 per cent to the factory price in order to determine the retail sale price, and thereby doubles the lumber freight bill by this transaction alone.

Since the same general practice of percentage increases is followed in a long list of other products, and lumber in some form is used in the production of practically every commodity, the \$250,000,000 paid in 1920 by the people of the United States in lumber freight was only a part of the total sum which they actually paid in various direct and indirect, obvious and concealed, forms for the transportation of lumber. The influence of freight is ordinarily lost sight of in such lumber products as the dwelling-house and furniture, where it should be fairly obvious, but in the



FOR MANY YEARS SHORT, CHEAP LUMBER HAULS BY WATER FROM MAINE TO THE COAST CITIES OF NEW ENGLAND SUPPLIED LOCAL LUMBER SHORTAGES SO CHEAPLY THAT NO PROVISION WAS MADE TO MEET FUTURE REQUIREMENTS

production of food, clothing, and fuel, and the manufacture of iron, steel, copper, and their myriad products, it is rarely considered. The \$250,000,000 freight bill was probably, therefore, doubled at least and possibly even trebled or more in its ultimate ramifications.

THE LONG HAUL URGES TIMBER GROWING

The long haul has therefore become an excessive burden. Some of this burden we have realized, but much of it is so concealed in the indirect use of lumber and in the higher cost of other articles that for the most part we have known and complained of it only as a part of the high cost of living. These excessive costs of transportation and the unfortunate economic and social consequences which have grown out of them have been bringing about the second period in our transportation situation.

When it costs up to \$25 a thousand to ship lumber from Portland to Boston and \$15 a thousand from the southern pine belt, it is not surprising that such volunteer second-growth timber as there may be in the North Carolina pine region and New England, both with much shorter and cheaper hauls to markets, is appreciated in value. Large freight differentials go a good way in discounting the size and the quality of the second-growth pine on abandoned farms, as contrasted with the high-grade material which it is still possible to cut from the southern and Pacific Coast forests.

Because it is relatively near its markets, second-growth "North Carolina" pine in Maryland, Virginia, and North Carolina has accordingly of late years held its own or more in actual sale values with the higher grade virgin stumpage of the Gulf States. Despite fluctuations, second-growth pine values have on the whole risen steadily with those of virgin timber. They now average about \$7 a thousand, which is approximately the advantage this region has over the extreme South in lumber freight rates

to Philadelphia, New York, and Boston, while the virgin timber commands a price of about \$9.

Recent studies of the prices actually paid on the stump for white pine second growth in central New England show still more striking conditions. Values had reached \$9 by 1915. For 1922, allowing even for a falling off since the abnormal prices of 1920, white-pine stumpage averaged about \$14 a thousand, apparently somewhat higher than prices paid for virgin timber in the Lake States.

GROW FORESTS AND SHORTEN THE HAUL

For approximately the last ten years second-growth pine in central New England, almost at the doors of the factories which use it for boxboards, has commanded the highest prices paid for soft-wood stumpage in the United States.

While stumpage price is a fair measure of returns, it falls far short of representing the entire advantage of the short haul to the timber-grower. Inferior species, small sizes, low grades, all acquire a greater value. Low freight rates make it possible to sell at a profit the lower grades of lumber which, in the case of distant markets, must ordinarily



(Photograph by Erickson, Courtesy National Lumber Manufacturers Association)

OXEN HAVE FREQUENTLY FURNISHED MOTIVE POWER FOR LOGGING FROM COLONIAL DAYS TO THE PRESENT. THEY WERE SOMETIMES USED ALSO IN EARLY DAYS IN THE SHORT LUMBER HAULS OVER DIRT ROADS FROM SMALL COMMUNITY SAWMILLS DIRECT TO THE CONSUMER

be handled at a loss or wasted. Fuelwood, posts, mining props, and similar products on which railroad rates are ordinarily prohibitive, except for short distances, can be moved. Logs and trees can be taken from the woods which otherwise would have to be left.

Most of these advantages to the grower of timber become also advantages to the consumer, in lower lumber prices, in the opportunity to secure low grades for the purposes for which they are suitable, in the opportunity to buy such products as fuelwood, posts, and mining props, which otherwise could not be obtained except at prohibitive prices, and in all the benefits which come from near-by rather than distant sources of forest supply.

Communities, forest regions, and incidentally states and

(Continued on page 320)

Trailing A Firebug

The District Ranger Finds a Goat, a Baby, and Some Camels

BY WILL C. BARNES

"**T**ALK about trailin' firebugs," remarked the district ranger as we sat on the porch of his little log cabin. "Ever hear of the chap I nabbed last summer for startin' a forest fire up on Pine Creek?" He chuckled at the recollection.

No, I hadn't; but, needless to say, I was more than anxious to hear about it. The ranger paused to relight his pipe, a smile still flickering under his drooping mustache.

He was the type that, alas for the Service, is fast dropping out of the work through advancing years and physical infirmities. These old fellows, who found their way into the Service in its early days, were men whose like are fast disappearing—miners, cowboys, sheep-herders, lumberjacks, and no small number of college chaps— young, adventurous, full of pep and fight, caring little for the meager pay they received, \$60 a month and find yourself, and buy your own tools besides. Some of their old reports lack polish; many words are misspelled; their writing is often illegible.

Those were the days of saddle-horses and pack-mules, long, hard rides and longer hours. They knew little or nothing of the technical side of their work. Enough for them to know that fire was the arch enemy of the forest, and that their job was to put it out. An "A" tent was their ranger cabin, and when it was necessary to send word for more fire-fighters, a good horse and an all night's ride over wretched trails carried the word, whereas now the telephone is found in almost every nook and corner of their domain.

Of such as these was this gray-haired, keen-eyed, ruddy-faced district ranger. He had served the Government all over the West. He fought the fires of 1910 in the white pines of the Cœur d'Alenes in Idaho till he was almost blind. A year later he was in the Medicine Bow

Range, in Colorado among the lodge-pole timber. Later, he drifted into northern New Mexico, and then westward into the yellow-pine country of northern Arizona, where the ground fires run like race-horses in the dry grass and needles; where water is scarce and where men's thirst drives them almost insane while on the fire lines.

In 1916 he was in the midst of the conflagrations that

covered all southern California, when brush, not trees, was to be saved—the hardest fires to fight in all the known world. He was a "big-timber" man, however, and while saving trees was worth while he found little satisfaction in saving brush from the fire fiend. And now, in the Sierras, he had found a region where the trees were old when the shepherds saw the Star of Bethlehem. Here was timber that was well worth the fight of a man's life to save.

"Last summer up here was powerful dry," he began at last, "an' everybody was watchin' mighty close for the least sign of smoke. We had a lot of guards and short-season men out in the hills; but the supervisor kept some of us old-timers close to our stations, where we could get the first news of a fire and start things movin'. It was sure hard work settin' round all

day long waiting for something to happen. Recollect that piece of poetry Bristow Adams wrote about the man who had to stay in the office while everybody else was out fightin' fires?"

"I wish I were out with the fellows;

Just my luck to be stuck here in town;

But I've got to sit tight when I'd heaps rather fight

To help keep these brush blazes down.

I'm sick of this end of the business:

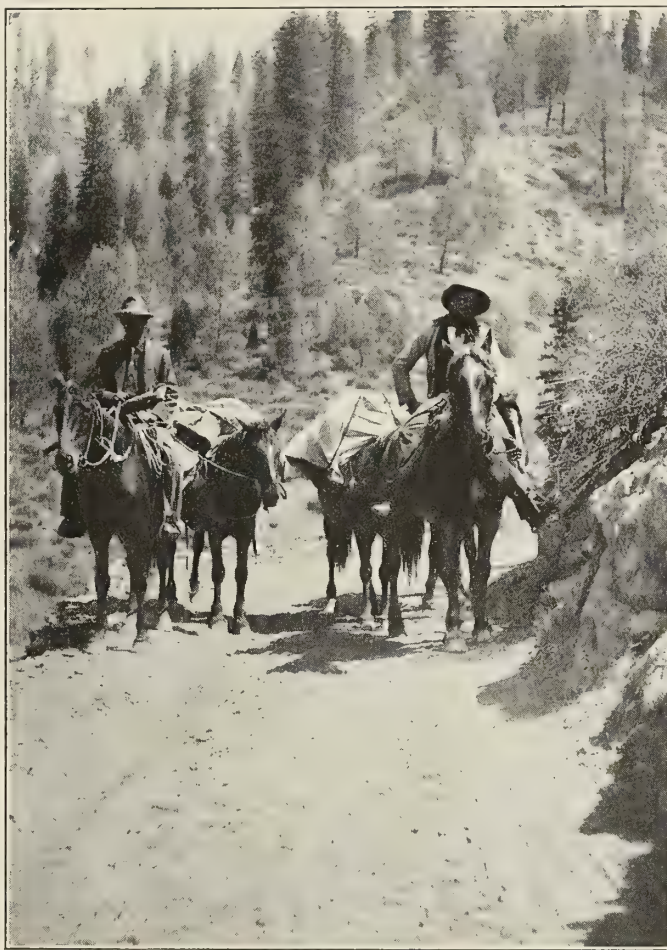
The ring of the querulous phone,

The telegrams, too, of flames breaking anew,

While I have to stand it alone;

And I'll own

It's hell to be watching alone.



THOSE WERE THE DAYS OF SADDLE-HORSES AND PACK ANIMALS—LONG, HARD RIDES AND LONGER HOURS

"There's Bill—he's gone with the pack-train;
 And Jim—he's to rustle the grub
 For the men on the line, and he's doing it fine,
 While I'm sitting here like a dub.
 The fellows are working like demons;
 They're scorching and blistered—no less—
 While I stay and chafe and am damnably safe,
 When I'd like to mix up in the mess.
 Well, I guess
 That the buck-brush ablaze is a mess.

"Out there are my supers and rangers,
 With lumberjacks, men from the mills,
 From fields and from slums—hoboes, tie-hacks, and bums,
 And ranchers who know all the hills;
 While I'm here, with no smoke in my nostrils;
 I am here, with no scorch on my cheek,
 When I'd rather be there, with singed eyebrows and hair,
 Than stuck in here week after week.
 Hear me speak?
 I'll be bughouse inside of a week."

The old ranger rolled the lines off as if his whole heart was in them.

"That's just the way we all felt who had to stick round and listen for the jingling of that 'phone bell. It was sure the hardest bit of work any of us ever had to do. One day I was settin' in my cabin half asleep when d-i-n-g-a-l-i-n-g-g-g-g-g-g-g-g goes that ornery bell. Outside the cabin the whole world seemed to be listenin'

to the droning of the katydids in the dry woods. Down along the pasture fence the horses was fightin' flies head to tail for mutual protection. It was hot, and up there in them big hills it can sure git hot when it tries, even with great snowbanks showin' all round.

"I heered the bell, but somehow didn't come to till it rattled away another long ding a ling-g-g-g-g-g-g-g-g. Then I comes alive. It's that lady lookout up on Shut Eye and she tells me there's a smoke rising straight up from the big timber down along the main road. 'Campers', says she, 'as sure as fate, for there ain't been no lightnin' storms down that way for several days. Some gent's gone fishin' and let his camp fire get away from him. Better git a move on.' She gave me the readin', which by the fire map shows me its in a mighty bad part of the forest an' was likely to be a humdinger of a fire before it was put out.

"Well, sir, I sure played in luck that day, for whilst I was givin' orders over the phone right an' left, along comes a young kid of a forest assistant an' his wife, driving a team on their way to Texas Flat, where he was to do some timber estimatin'.

"Here's my one only chance, sez I to myself, and it didn't take me five minutes to coax that kid to leave his wife at my cabin, to be ready to receive fire messages, and let me and him git out onto the firin' line, where I



IN THE SIERRAS, WHERE ARE FOUND TREES WHICH WERE OLD WHEN THE SHEPHERDS SAW THE STAR OF BETHLEHEM



AN OLD-TIMER—NO FANCY BUNGALOW HOUSED HIM AT NIGHT. HE WILL STAND FOREVER AS A TYPE THAT WILL NEVER AGAIN BE KNOWN IN THIS COUNTRY—A RUGGED BUT PICTURESQUE FIGURE OF A MAN DISTINCTLY A PRODUCT OF HIS TIME

sure knew we'd be needed. The kid was wild to go, him thinkin' fire-fightin' was a plumb picnic. Knows better by this time.

"Inside of twenty-five minutes we was on our way, saddled up with two pack animals loaded with tools and grub, his little wife a wavin' her hand to us as we turned the corner down the trail and out of sight of the cabin. Before we left I'd phoned for help in all directions and calculated some of them would git there about as soon as we did.

"When we reached the fire it didn't take us long to see we had a man's-sized job cut out for all hands. It was already spread over fifty acres or more, and a wind had come up which was carrying it through the dry needles and duff about as fast as a good man could walk. The kid and me gits there first and we set to work without losin' no time. Eventually we had ten men on the fire lines, and we didn't git her surrounded and under control before daylight the next morning—sixteen hours of steady work.

"It was about 2 o'clock that afternoon before we had the fire safe, an' then I left one man on guard, an' sending the others back, I stayed to keep an eye on some old snags that was burnin' and also to take a look around the country and see could I find out where and how it started, that bein', as you well know, the

last, but most important, part of the fire-fightin' biz.

"Natchelly I goes back to the road for my start, feeling sure it began along there somewhere, and that some camper feller was the cause of it.

"It was fairly easy to find the beginning, for the fire had eaten its way in a long, narrow strip for the first fifty yards or so before it began to spread out.

"Follerin' up the edge of this point, I found signs of a camp about fifty yards off the road. The road was used a lot by tin-can tourists, and the tracks in the dirt showed plainly where he had turned off the road, driven his car under a big pine, and started his camp fire. I seen plain enough where the car

stood, for there was a big spot of black grease on the leaves and litter. Off to one side his bed had been made, and from the tracks here and there I sized it up as being two people—a man an' a woman. But I never in all my experience seen an outfit what left as little sign about a camp as those two. I found an empty match-box what had held them funny little Swedish tapers, an' the wrapper from a bunch of Camel cigarettes and some eggshells; also I notices a piece of white cotton rope, one end tied hard and fast round a saplin' about six feet up and about a foot of it hanging free.

"Looked like it had broken, and I studied it for some



LATER HE DRIFTED WESTWARD INTO THE TIMBERED COUNTRY OF NORTHERN ARIZONA, WHERE THE GROUND FIRES RUN LIKE RACE HORSES IN THE DRY GRASS AND NEEDLES, WATER IS SCARCE AND THIRST DRIVES THE MEN ON THE FIRE LINE ALMOST INSANE

time, tryin' to make out just what part it had played in the camp. Looking further, I found another saplin', about ten or twelve feet off, which showed plain signs of a rope havin' been tied around it at about the same height the other one was. Hammock, says I, and slips the piece of rope into my saddle-bag. Whilst I was lookin' round the tree that had the piece of cotton rope tied to it, I noticed a few white hairs stickin' to the trunk of the tree about two feet from the ground; also a little bunch of it lying on the ground. The hair was neither horse hair nor cow's hair. I knowed that much. Some small animal had been rubbin' hisself on that tree, and when I looks closer I finds some funny-looking tracks on the ground, that looked for all the world like goats' tracks. But what's a goat a doin' up there in that country? Far as I know, there ain't never been a goat within fifty miles of the place.

"So I takes a good sample of the hair and sticks it in an old envelope, puts it in my pocket, and rides off, not knowin' exactly what I'd do with it, but realizin' that a good detective don't over-

look no signs, no matter how simple. "The way the fire got out was as plain as the nose on your face, for it was easy to see they'd pulled out in the morning leavin' their camp fire burnin', and it had spread slowly for a long time, workin' its way in the deep duff until it reached a big dry pine lying on the ground. From that point it spread rapidly, the wind probably helpin' matters.

"Several cars had gone down the road after he'd turned into it, so I didn't git much of a chance to learn

what kind of tires he had, 'ceptin' in one place near his camp, where one rear wheel ran over a small fresh mole hill, and in the soft dirt the tread showed it to be a 'Kelly-Springfield,' rather well worn. Where the other rear wheel cut into the road, there was about a foot of sign in the dust of the road and it was a smooth tire. But that was every bit of evidence I could dig up.

"After studying the thing over for a while, I decided to ride down to a little cross-roads store about ten miles below and see what I could learn down there. They told me several cars had come by that day and the day before, but nobody had noticed their tires, so that didn't get me nowhere.

"There was a kid there hanging round the place, and, as we talked about the cars, he butts in with, 'Say, did you notice the goat on the running-board of one car what went by here yesterday morning?'

"I come alive right there. 'A goat?' says I. 'Yep,' sez the kid; 'a white goat, with fine, silky hair.' 'In the car?' I asks. 'Nope,' sez he; 'goat's a ridin' on the running-board in a nice little cage built a purpose for

him. On the other running-board was a small bale of alfalfa hay, an' I seen a baby in the woman's lap.'

"I makes it out the goat's to furnish milk for the baby. Did you ever hear tell of such a trick as that in all your born days? Hauling a milk ranch along with you when you go campin'.

"Then I remembers them there white, silky hairs and that piece of cotton rope round the saplin', which I calculated was part of the rope for hangin' a hammock. Milk, goat, baby, hammock, sez I, to myself. What's



ON THE TRAIL. THE OLD-TIME TYPE OF FOREST RANGER, COWBOY, SHEEP-HERDER, AND LUMBERJACK—A FAMILIAR SIGHT IN THE EARLY DAYS OF THE SERVICE AMONG THE BIG HILLS

the answer? Easy enough, sez I, when you find that car with the goat ridin' on the running-board and a baby on the seat and a hammock with a broken piece of white cotton rope in the dunnage you've got the *hombre* what caused that fire back yonder.

"Feller didn't mention his destination, did he, Kid?" I asked. 'Well, not exactly,' sez the kid. 'He did say he aimed to stop over on Snow Creek and see if the trout would bite. Mebbe he's there yet.'

"Fifteen minutes later I was on the road to Snow Creek. Sure enough the tracks of an auto turned out of the road and went down the creek, where there was a sort of a old wood road. 'Bout two miles down I finds him—goat, baby, and all—and, would you believe it, there was a hammock swingin' to a saplin' with one rope shorter than the other. It was white cotton rope at that. I lacked just one more bit of evidence.

"'How's the fishin'?' I sez. 'Fairly good,' he comes back, polite and nice.

"I gits out my pipe and loads it. 'Match?' sez I, actin' like I was plumb out of 'em. 'Sure,' sez he, and out comes one of them boxes of Swedish matches built like little candles. Then he pulls a bunch of 'Camels' from his shirt pocket. 'Thanks,' sez I, as we both lit up an' me figuring just how I was goin' to break the news to him. He was a doleful-lookin' fisherman when I finally told him he was under arrest for leavin' his camp fire burning and settin' the woods on fire. But he seen I had him dead to rights, so like a good sport he went back with me to the cross-roads store.

"Old Man Jones, the storekeeper, was justice of the peace, and after hearin' my side of the case and just how I come to run him down, the man decided he'd plead guilty rather than try to fight it. The old judge fined him \$75, which was about right, everything considered, and the case bein' closed, I went back to my station, and the man with his wife, baby, and goat went on his way a little poorer than when he started out, but a heap sight wiser about puttin' out camp fires up in the hills."

The Matrimonial Tree

By R. E. McNATT

MAN has discovered many uses for the beautiful trees that mother Nature has provided him with, but the young and romantic lovers of San Saba, Texas, come forward with a new use, as they have turned a large, spreading live-oak tree into a marriage altar.

This huge oak, which is commonly known as the "Matrimonial Altar," stands like a deserted giant in the

middle of the public road on the edge of San Saba. All its companions have gone down before the onrush of man, but in spite of the fact that this one stands in the road, its huge size and beauty, and the tradition that goes with it, have prevented it from the heavy swing of the woodman's ax.

Tradition in this part of the country has it that long before the white man invaded the valley brave and daring Indian warriors and shy Indian maidens who had been smitten by the arrows of little Dan Cupid stole from the wigwams and made love to each other under the boughs of this huge oak, while the moon sent its mystic and silvery rays down through the leaves.

Whether the Indian used the "Matrimonial Altar" to woo his future squaw is not known, but it is a well-known fact that some of the oldest and most prominent citizens of this section of the country were united for life while under the tree, and today lovers still seek the shady boughs of the spreading oak when they feel that they cannot live without each other. In the spring, especially in June, as many as three and four couples are sometimes married under the tree on one Sunday afternoon.



THE ROMANTIC TREE OF SAN SABA

What the Stork Brings

"The United States Department of Agriculture has put out a bulletin on bird preservation. About the same time a newspaper remarks, 'Protect the birds. The dove brings peace and the stork tax exemption.'"—*Lemhi Ranger*.

The Age of Monterey Cypress

BY GEORGE B. SUDWORTH

THE longevity of the Monterey cypress, a relative of the Old World Cypress tree of the Egyptians and Romans, has been long a matter of conjecture. There has been little opportunity of determining the age of large trees, which are from fifty to seventy feet in height and from three to sometimes six feet in diameter. Fortunately, last year the long-looked-for opportunity came of learning something definite about the age of these trees through Mr. E. L. Guppy, of Pacific Grove, Monterey County, California.

The severe coastal storm of 1917 uprooted a number of medium and large-sized trees in the Cypress Point grove. As the trunks were being sawed into sections Mr. Guppy counted the stump rings of three trees, which respectively showed ages of 200, 250, and 300 years, the oldest tree having a trunk diameter of nearly six feet. Strangely enough, however, two other trees, of unusually straight, thrifty growth, showed respectively only fifty rings for a stump diameter of two feet, and seventy-five rings for a diameter of three feet. Evidently, the Monterey cypress grows very rapidly in easily permeable soil, the situations occupied by the latter trees, and much more



A SENTINEL CYPRESS ON THE MONTEREY DRIVE



SUNSET GLOW AND PURPLE SHADOWS AND A LONE CYPRESS ON GUARD AT MIDWAY POINT



Photograph by Mark Daniels

MORNING ON THE COAST-LINE NEAR MONTEREY—AN ANCIENT CYPRESS AT THE WATER'S EDGE

slowly in rocky situations, the sites occupied by the older trees cited.

The Monterey cypress is one of several other California conifers that grow naturally over very limited areas. The range of Monterey cypress is confined to about two miles of California coast south of Monterey Bay, in a belt about 200 yards wide, extending from Cypress Point to Point Lobos. There seems to be no evidence that it ever occupied a larger range, although various conjectures are extant that it once grew in a wider coastal belt, part of which is now submerged.

It does not appear that it is in imminent danger of soon disappearing from its rocky and sandy habitat, for it is constantly reproducing itself from seed. Moreover, the tree is extensively cultivated on the Pacific coast from Washington to Lower California, while it is a familiar ornamental in European gardens, in mild climates of South America, and in Australia and New Zealand. Its ability to thrive away from the coast and at elevations up to 2,000 feet was tested nearly 20 years ago, in the San Bernardino Mountains, by T. P. Lukens, of Pasadena.

Of all of our true cypress trees, the Monterey cypress is doubtless the one best known, particularly by inhabitants and travelers in the Pacific Slope region. Very interesting also is the fact that of the seven species of cypress growing within our borders five of them are more or less confined in their geographic distribution to the Pacific Slope region, the other two species occurring only in central and southeastern Arizona. They are the Mon-

terey cypress, Gowen's cypress, Sargent's cypress, McNab's cypress, Tecate cypress, Arizona cypress, and Smooth cypress, the last two inhabiting mountainous sections of Arizona. None of the Pacific Slope cypresses grows naturally farther north than southwestern Oregon, where the McNab cypress occurs. One of these trees, the Tecate cypress, sometimes called the Guadeloupe cypress, which is of rather rare occurrence in southern California, extends southward into Mexico. All of our cypress trees vary greatly in their altitudinal range, two of them, the Monterey cypress and Gowen's cypress, growing at sea-level, while the others range up to from about 1,000 to 7,000 feet above sea-level. Owing to the highly ornamental value of cypress trees, the foliage of which is sometimes of a silvery hue, at least four of them have been introduced into European and English gardens, where in temperate climates they are successfully cultivated.

Our species of cypress (*Cupressus*) are of little commercial use, although the odorous wood is firm and durable. Some of them are locally used for fuel, fence-posts, and for house-logs. A log cabin known to the writer, which was built of Arizona cypress logs, was well-preserved for over forty years. Native cypress trees are very variable in their height and diameter growth, depending much upon whether they are growing in protected or exposed situations. As a rule, they are rarely over 75 feet in height and 6 feet in diameter, the Monterey cypress being the largest.

Woods That Lure Fish

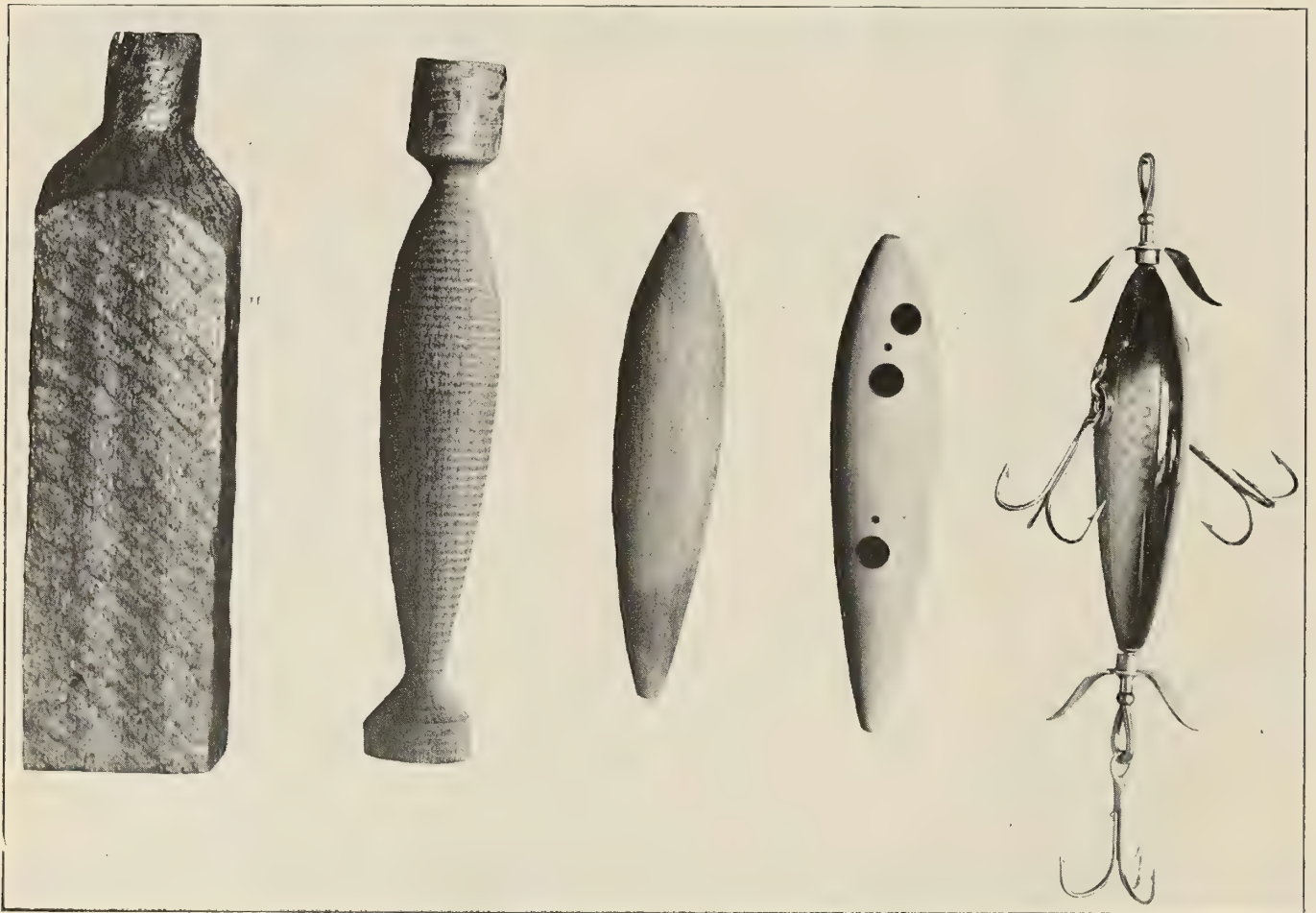
BY HOWARD F. WEISS

DECEPTION is not all among the wicked. There is no field of clean, wholesome endeavor in which the art of deception has been carried to more clever and versatile lengths than in the gentle art of angling. Man matches wits with fish; sometimes he wins, more often he loses. But failure merely spurs the sportsman to renewed efforts of deception. Meanwhile his prospective captives go their under-water ways, serenely unconscious of the millions of highly developed brains and the thousands of skillful hands working to bring about their untimely ends by new and alluring strategies.

One of the most recent coming to my notice is United States patent No. 1,180,753, which thus describes a new "sure-winner" fish bait, made of wood with a mirror inserted in the body: "The mirror is an additional feature that insures the effectiveness of the bait in the following manner: A male fish, seeing his image upon looking therein, will appear to see another fish approach it from the opposite side with the intent to sieze the bait, and this will not only arouse his warlike spirit, but also appeal to his greed, and he will seize the bait quickly in order to

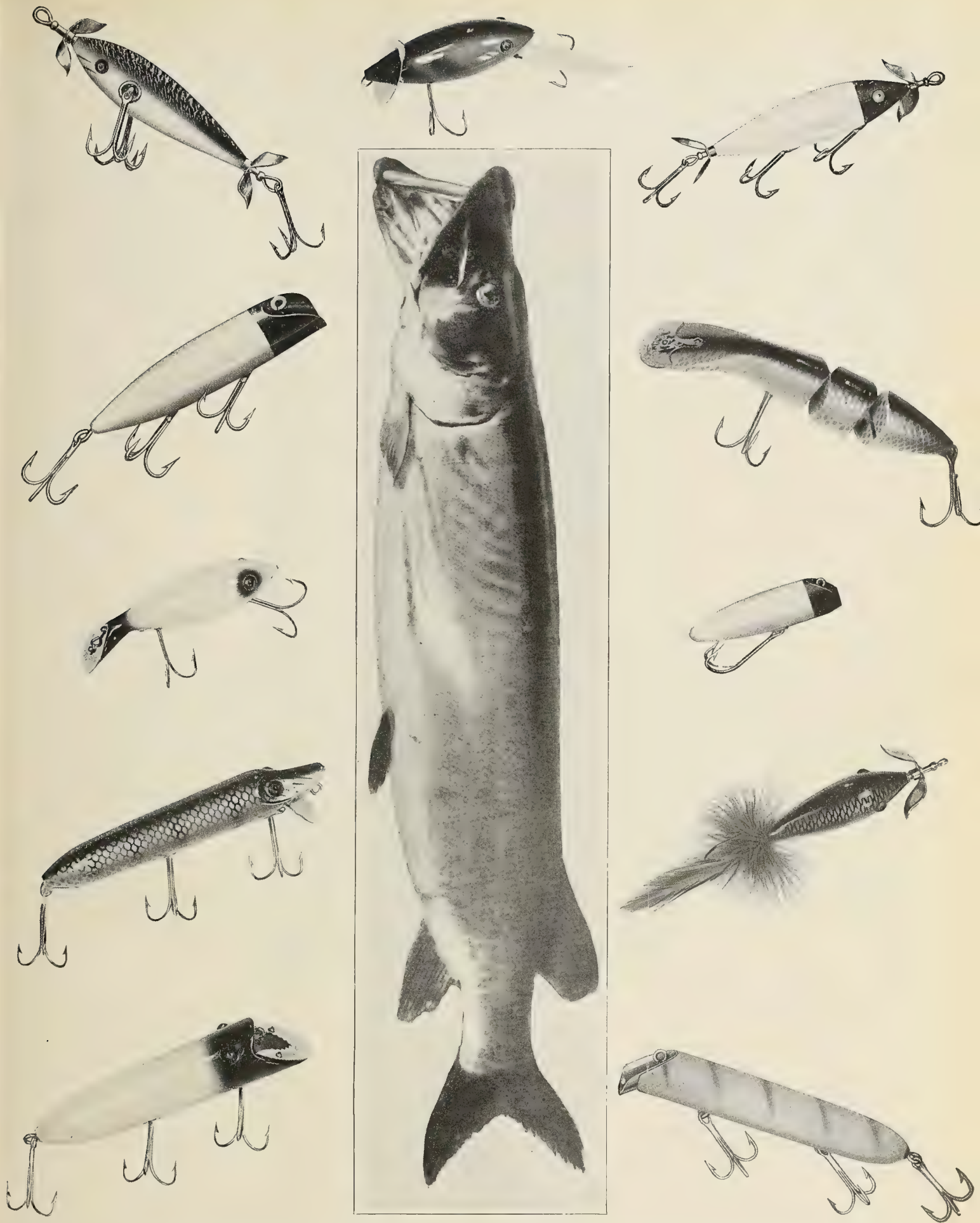
defeat the approaching rival. In case the fish is suspected of cowardice, I may make the mirror of convex form, in order that the rival or antagonist may appear to be smaller. In the case of a female fish, the attractiveness of a mirror is too well known to need discussion. Thus the bait appeals to the ruling passion of both sexes and renders it very certain and efficient in operation."

Does not this show keen and observing analysis, not only of the frailties of fish, but also of the genus homo? And could any paragraph better describe the versatile and gratifying artifice which marks the sporting attitude toward our underwater friends? Nor does the practice of deception limit itself with fine distinction to one end of the line only. It seems to have been legitimized as a righteous part of the sport of angling. The word of the fisherman, unsubstantiated by that of a goodly number of eyewitnesses, is a word to bring a knowing wink of the eye, upturned corners of the mouth, and undisguised but sympathetic incredulity on the part of the listeners. Exaggeration and deception, good-natured, of course, must have always played an intimate rôle in the art of



THE CYCLE FROM CRUDE WOOD TO FINISHED, GLEAMING BAIT

In the evolution of the glittering bait that lures the "poor fish" to his doom, five steps may be traced, covering its first form in the wooden block, through two stages of turning which bring it in shape for the application of the brilliant enamel, and then the final artistic color touches and the attachment of the deadly triple hooks.



IF YOU WERE A FISH, WHICH SHINY LURE WOULD PROVE YOUR UNDOING?

Many successful wooden baits have no real resemblance to a fish, except that they look more or less shiny. Some shine, or at least light color, seems necessary in all artificial baits. This furnishes the "flash" to which certain of the finny brethren eventually succumb.

fishing. Did not Mark Antony's infatuation for Cleopatra lead him to resort to the fisherman's art in his efforts to win her admiration? In the "Life of Mark Antony," in Plutarch's Lives, we read of him performing in this wise:

"It would be trifling without end to be particular in his follies, but his fishing must not be forgotten. He went out one day to angle with Cleopatra, and, being so unfortunate as to catch nothing in the presence of his mistress, he gave secret orders to the fishermen to dive under water and put fishes that had been already taken upon his hooks; and these he drew so fast that the Egyptian perceived it. But, feigning great admiration, she told everybody how dexterous Antony was, and invited them next day to come and see him again. So when a number of them had come on board the fishing-boats, as soon as he had let down his hook, one of her servants was beforehand with his divers, and fixed upon his hook a salted fish from Pontus. Antony, feeling his line give, drew up the prey, and when, as may be imagined, great laughter ensued, 'Leave,' said Cleopatra, 'the fishing-rod, General, to us poor sovereigns of Pharos and Canopus; your game is cities, provinces, and kingdoms.'"

But it is wooden baits with which this article is concerned. Little, indeed, did that sturdy old Michigan pioneer, William Tuttle, when he dragged his wooden bait with metal fins through the placid waters of Magician Lake more than 80 years ago, imagine that he was setting in motion the ripples of an industry which a generation later would bring employment to hundreds of people, joy to thousands of fishermen, and the frying-pan to millions of fish. From his idea, nevertheless, has sprung the great variety of attractive wooden fish baits which today lure not only the finny family, but the great brotherhood of disciples of Izaak Walton.

It is not so many years ago that artificial baits were limited largely to metal spoons, rubber minnows, grasshoppers, and divers bugs; but within recent years the

wooden baits have come upon the market in ever-growing quantity and variety. The manufacture of these wooden baits has, indeed, become an art worthy of the soul of the artist. Some of these lures are masterpieces of craftsmanship and artistic expression. Displayed in the street windows of sporting-goods shops, they invariably halt the rod-and-line devotees and thrill them with the great yearning. Men denied the means of indulging in the sport of fishing have been known to stand before these windows for hours, held by the fascinating sensations and phantom dreams which these bright and curious lures inspire. Perhaps, if the truth were known, as many fishermen are caught by the attractive baits now offered as are fish which bite at them. Where is the sportsman with the blood of old Izaak Walton in his veins that can pass a shop window displaying a veritable museum of these attractive baits without succumbing to the desire to add one more to his collection?

Wood for fish baits has certain properties that make it an ideal material. It can be easily worked and patterned into a variety of forms. It combines great strength with lightness, and it is susceptible to a beautiful finish, as it holds enamels and varnish very well. Especially to the tenderfoot angler does the floating quality of the wood particularly appeal; for who is there that does not get a "back lash" once in a while, and if the bait sinks to the bottom there is generally the deuce to pay.

Then the smooth, nicely balanced body, while resistant to bumps and knocks, offers a minimum of resistance to air friction, as it goes whirling on its cast. This makes long distances possible, even for the novice.

Red cedar is the wood most generally used, although other kinds of wood are employed, and notably, in the last few years, white cedar. The wood must combine lightness with strength, so that the hooks will not pull out. It should be water-resistant, have the proper buoyancy, and take a good finish.

A short time ago Miss A. E. Edwards, of the University



(Courtesy Mrs. C. B. Davis)

A TRUE "FISH TALE"

Documentary evidence of the luring, by a successful sportswoman, of a wary bass with a piece of red cedar!

of Wisconsin, made a study of the rate at which various woods absorbed water. She took air-dried pieces of wood, all heart wood, cut to one inch by one inch by twelve inches, and submerged them in water at 60 degrees Fahrenheit for 105 days and measured the amount of water absorbed. The results obtained were as follows, the values indicating the average daily absorption of water expressed in per cents of the original weight of the wood: Green heart, .23; black locust, .24; red gum, .31; yellow pine, .31; Douglas fir, .33; tamarack, .42; white oak, .42; Port Orford cedar, .62; Western hemlock, .53; birch, .54; Bigtree, .54; Western larch, .56; bald cypress, .59;

articles as food by receiving what might be called "chemical stimuli" from them. Such fish are particularly the bullheads and catfishes. They use their eyes but little, or not at all, for this purpose and cannot be caught on artificial wood baits, because they mean nothing to them. A piece of liver hung in the sun for a day or two is what attracts fishes of this kind.

Other fish recognize articles as food because they move and are about of the right size and appearance. In other words, they recognize food with their eyes, depending little or not at all on chemical stimuli. Hence they are dependent on living material and on that account are



A BIT OF LANDSCAPE BEAUTY IN THE SUPERIOR NATIONAL FOREST

This country is the happy hunting ground of the disciple of the rod and line, for in its myriad lakes are found the finny "fighting four"—bass, pike, pickerel, and muscalonge.

pin oak, .64; post oak, .78; Northern white cedar, .84; Western red cedar, .85; white pine, .98; red oak, 1.00; honey locust, 1.44; black walnut, 2.72.

This study would indicate that red gum—that much-despised tree a few years ago, but now through study made one of our most valuable forest woods—should make a good wood for fish bait. Red gum is strong, tough, and light in weight, and takes a beautiful enamel finish. Furthermore, the heart wood is quite durable and, as will be noted from the table, resistant to water absorption, so that the bait will not lose balance.

All fishermen have their favorite baits and swear by them through thick or thin, but perhaps a knowledge of the habits and haunts of fishes has more to do with success than anything else. Some fish, for example, recognize

strong, active, and attack their prey suddenly. Because of this they can be fooled by artificial baits, and these characteristics rank them as "game fishes."

An important fact in selecting the wooden bait is to have it conspicuous under the circumstances in which it is used. This will be affected by weather (sunshine or cloudiness), color of the water, degree of turbidity, color of the bottom, etc. The value of a bait with several contrasting colors lies in its meeting many conditions.

Some fishermen, and among them are experts, believe that fish may become so accustomed to seeing artificial bait dragged through the water that they refuse to be fooled and will not bite such bait. There is experimental evidence to show that fish will learn to shun food offered on a disc that gives them an electric shock and will learn

to recognize it by color. But this process of learning is a very slow one, and when the lessons are discontinued they are quickly forgotten. It is probably not possible for any fish in nature to learn this by experience with fish baits. It has happened often that trout fishermen lose hooks and then catch the same trout a few minutes afterwards on a new fly.

While many of the wooden lures are lifelike replicas of minnows and under-water life, many of them have no resemblance, either in form or coloring, to fish or anything that swims, crawls, or flies. Why, then, are the fish attracted to them? The answer appears to be in the word "flash," as explained in the following quotation from Francis Ward's book, "Animal Life Under Water":

"I will now describe the under-water appearance of lures that mainly depend upon 'flash' to make them attractive. Most pike water swarms with roach and rudd. The live bait of the pike angler is only one among many thousand of fish in the water, and yet the pike are attracted to the captive bait. 'Flash' is the explanation. The free fish in the water are swimming about on a level keel and are rendered inconspicuous by reflecting their surroundings. In consequence they do not arrest the attention of the pike. The captive bait, on the other hand, is constantly flashing in the water, as it twists and turns in its endeavor to escape. The pike is attracted and seizes the roach on the snap tackle.

"The spoon bait depends entirely upon 'flash' to attract fish. Most spoons, as supplied by tackle-makers, are made with far too extensive a flashing surface. Such spoons certainly attract the predatory pike or trout, but where the fish comes up to inspect, he follows for a time, and then falls back. The flash is unnatural and too bright.

"I have used a spoon made in the following manner, so as to imitate as far as possible the appearance of a damaged or sick fish: The whole spoon is painted dark green, except for a narrow strip of clear metal which runs diagonally across the convex side. This strip starts from a point at either end and is not more than a quarter of an inch wide in the center. The swivel ring is attached so that the spoon spins with a wobble. Seen from under the water, this spoon gives a quick flash, then a definite interval, followed by another quick flash."

Although the author does not specifically mention here wooden lures or plugs, it would appear that the flash principle applies to them with equal force. These baits are not only highly and richly colored, but they are made in forms which make them wiggle violently, or cut up other striking antics, as they move through the water, thus arousing the curiosity and, perhaps, the anger of the fish.

(Photographs by courtesy of the United States Forest Service, The South Bend Bait Company, James Heddens' Sons, and the Wisconsin Conservation Commission.)

Impressions from a Southern Journey

BY SENATOR CHARLES L. McNARY

LOOKING through a car window while riding through the southern states, or making observations from an automobile, one is distressed by the sight of monuments of vast areas of stumps that mark the places where formerly stood virgin forests. It was but natural that in time that scene would reach the nerve cells of the enterprising people of the South. The picture, though an ugly one, made itself felt, and now state officials, private owners of timber lands, and civic organizations are aroused over their rapidly disappearing pine forests.

In my judgment, this state of mind on the part of the people of the South will guarantee co-operation with the government in some plan of reforestation that would have been considered impossible a few years ago. Everywhere the special Senate Committee on Reforestation went, crowds of interested citizens attended the hearings and did everything possible to bring to the committee data, material, facts, and statistics that will be helpful in proposing legislation to the Congress.

The question of reforestation is an immediate one for the South because of the admitted fact that, unless new

crops of timber are grown under modern methods, in a period of time not in excess of three decades, one of its natural resources will have practically become exhausted. The owners of the pine forests in these states have done little to protect their trees against destruction by fire, and, indeed, but few of the states have taken advantage of

DURING March the Senate Committee recently appointed to investigate the need for a National forest policy visited the South and held public hearings in Jacksonville and Pensacola, Florida; Hattiesburg and Gulfport, Mississippi, and New Orleans and Bogalusa, Louisiana. It did not confine itself to hearings. It went into the piney woods and the "cut-overs" and studied conditions on the ground. Upon its return to Washington, Senator McNary, chairman of the committee, summarized in this interesting statement his impressions of the forest situation in the South.

government co-operation offered in the Weeks Act. Because of the want of appreciation by many of the southern folk of the value of the forests, laws prohibiting stock running at large are not enforced, with the result that the forest lands are burned annually to insure a succulent crop of grass for cattle, thereby destroying young trees and the seeds necessary to insure reproduction of the forests. The razor-back hog runs at large and is a destructive agency of considerable importance.

To the glorious credit of the southern people, they realize the errors of the past in dealing with the forests and appear to be anxious that the government should take the lead in some uniform and practical policy of reforestation, and I predict that no section of the country will give more active support to this character of legislation than will the people living in the southern states.

A State That Abandoned Its Forests

By TOM WALLACE

With photographs by Dr. Willard Rouse Jillson, State Geologist

KENTUCKY has been called the state that is first in self-esteem and forty-fifth in education. The phrase was turned in a discussion of schools. It may be applied, not unfairly, to the situation of Kentucky as the possessor of a vast heritage which now is vanishing by reason of neglect. The state hardly observes its loss.

Only economic illiteracy—again I am borrowing a phrase—makes possible the amazing and disheartening inattention of Kentucky to her loss, and explains the absence of any organized movement to attract the attention of Kentuckians to what is taking place; to awaken them to the necessity of taking stop-loss measures incalculably more valuable to the general welfare if taken now than if delayed.

Kentucky had originally 15,000 square miles of forest in a total area of 41,000 square miles. The development of the state was not rapid. The greater part of this natural wealth remained in the boyhood of men now living. Vast areas still stood in untouched virgin timber during my own boyhood, and I am not beyond the forties.

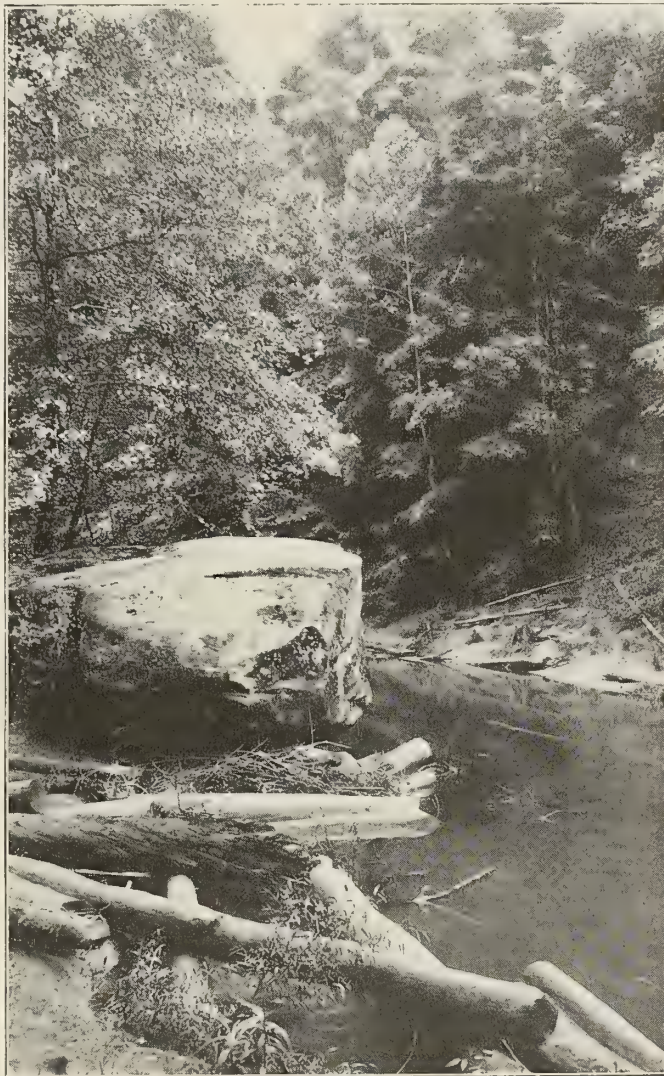
As a lad, in western Kentucky, I lived upon a farm which had 800 acres of virgin timber. This tract was surrounded by a boundless sea of forest foliage, with a "submarine" population of wild turkeys and smaller game. Nearly every farmhouse had a group of dependents in the form of stag hounds that had been used in the last chases of that section, a stack of wolf traps, now rusting in disuse, and a few long rifles of the "cap-and-ball" type—the squirrel-guns and deer-guns of the pioneer period which made Kentucky riflemen famous in more than one war.

The woodlands still swarmed with squirrels, the water still swarmed with ducks and geese. Log houses cost nothing but labor plus the price of locks and windowsash.

THE DAYS OF BIG TREES AND BIG MEN

Fuel was free. Fishing, in clear streams fed from watersheds lying deep in leaf loam, was good. Farming was encroaching upon the domain of the trees, but it then seemed too broad to be wholly invaded.

In boyhood I saw many "deadening" destined to become tilled fields, and many "clearings" in which gangs of men with hand-spikes rolled into piles logs which now would be worth \$100 each or more and burned them to make way for the plow. Recently I saw poplar boards, made from trunks inferior to those burned in many a clearing, sold in Louisville for more than the value of their weight in corn. I have seen one tree sold for more than twice the average value of an acre of ground where thousands of acres were cleared of trees to make room for tillage. Less timber was destroyed deliberately in clearings in the mountains than in the lowlands of Kentucky, for the reason that in the highlands the soil is less productive and farming is a smaller project. Long before coal and oil were developed in the Kentucky mountains, a popular saying of the natives was, "Only logs and liquor are cash."



A BEAUTY SPOT IN OLD KENTUCKY WHERE FINE FISHING HOLES MAY BE FOUND OR GOOD SQUIRREL HUNTING ENJOYED

The log slides, down mountains to creeks and rivers, brought timber to the "tide" and cash to the land-owner or the log pirate. The logs came from a natural arboretum which, after the lowlands were pretty well stripped of the original stand, seemed inexhaustible, at least to those who lived in the hills and whose mental



INVITINGLY SHADED BY NATURAL GROWTH. OVERHANGING LUXURIANT ROWS OF OSAGE-ORANGE TREES MAKE THE PADUCAH AND MEMPHIS HIGHWAY BETWEEN FULTON AND HICKMAN THE AUTOMOBILISTS' DELIGHT, EVEN IN THE HEAT OF THE MID-DAY SUN. KENTUCKY SHOULD HAVE A ROADSIDE TREE LAW, FOR IT WOULD BRING INTO EXISTENCE AN AVERAGE OF 1,000 MILES OF FOREST TREES IN EACH COUNTY, SHADING 500 MILES OF RURAL HIGHWAYS

horizon was the horizon that presented itself to the eye. Out of the mountains, down to the Cumberland, the Big Sandy, the two forks of the Kentucky River, and from many other streams came, as the mountains were called upon for their ancient store, a flow of sawlogs that covered the waters in freshet stages as the vegetation from equatorial Africa covers the Nile.

In the rich, dark soil of the western lowlands stood tulip poplars, often six feet in diameter, sometimes seven, in rare cases eight, with column-like trunks, blade-straight and without a limb for thirty or forty feet, their topmost tulips 200 feet from the bole. Among them stood oaks, of sundry varieties, looking old enough to have sheltered the Druids at their ancient rites, and "shellbark" hickories in whose skyscraping branches squirrels lying close on windy days presented a mark for riflemen at once enticing and difficult to hit. In the swampy "slough" lands along the river the valued cypress and the sycamore, then valueless, contended for space.

The timber of the mountains, still virgin after the rape of the lowlands, was somewhat less majestic than that of western Kentucky, but somewhat more varied, for here the conifers mingled their darker plumes with the green leaves of deciduous trees. If no trunk thrilled the beholder by its immensity, like the tulip poplars of the lowlands, the vastness and the beauty of the forest were impressive. Here the sea of foliage, gently rolling at the

other end of the State and in central Kentucky, seemed storm-tossed and shoreless.

MEMORIES OF OLD KENTUCKY

I have not gone back to western Kentucky for many years, preferring to remember it as it was when the strutting wild gobblers were heard in the woodlands, through the open windows, in any farmhouse, in early morning in spring, and when cowslips, lady slipper, Dutchman's-breeches, larkspur, sweet William—a wilderness of flowers beneath a wilderness of trees—covered the ground, and where the fish could be seen taking the bait—or taking the small fish—in limpid waters unpolluted. But recently I toured the mountains from Tug River, on the West Virginia border, to Burkesville, on the Cumberland, in the western foothills, without seeing from a car window, from a mule's back, or from "shanks' mare," when footing it along the trail, a single acre of virgin forest, in regions from which little sawlogs still come in dribbles when the streams are red with the blood of eroded hills from which the timber has been cut and where farming has run a short course to bankruptcy.

Virgin timber is nowhere a necessity, but forest products are everywhere necessities, and a supply of timber near scenes of consumption, in this period of mounting freight costs and labor costs, is necessary to welfare. Pennsylvania learned that when the state got to the point

at which the mine-owners were importing the timber necessary in coal mining. Kentucky has learned nothing by the experience of other states or by the enlightenment of the world, if the state is to be judged by its inaction and by the apathy of the public when the state's embryonic, yet promising, forestry bureau was abolished. There was no general outcry, no prevalent objection, when a candidate for the office of governor in 1919 poked fun at state forestry. There was no evidence of popular disapproval when, in 1920, Governor Morrow, the man who had ridiculed forestry from the stump, sent to the legislature a message including this:

"The following officers are, and have been for several years, considered as needless and useless, and therefore should be abolished—The State Forester and the deputy foresters under him."

I believe the governor was accurate in his statement that the officers he mentioned were "considered" needless and useless. At any rate, there was no indicated objection, save upon the part of the *Courier-Journal*, and perhaps the *Lexington Leader*, even upon the part of the press, when the legislature passed, as an administration measure, fulfilling the economy pledges of a mountain candidate for the governorship in his campaign, a measure abolishing the Forestry Commission.



ROADSIDE TREES, THROUGH THE DEPLORABLE LACK OF A LAW IN KENTUCKY TO PROTECT THEM, AND NO PUBLIC SENTIMENT FOR SUCH A LAW, ARE WHOLLY NEGLECTED. POLE AND LINE COMPANIES HAVE PRUNED TO DEATH TREES WITHIN THE RIGHT OF WAY, WHILE OWNERS OF ABUTTING PROPERTY HAVE CUT THEIR LOCUSTS FOR POSTS AND LARGER TREES FOR SAWLOGS, LEAVING THE ROADS UNDER NO TIMBER BUT LINES OF TELEPHONE, TELEGRAPH, AND ELECTRIC LINE POLES, FLANKED BY AN OCCASIONAL STRETCH OF CRIMINALLY MUTILATED TREES

THE TRAGEDY OF POLITICAL DESERTION

Two years afterward, in response to a suggestion from James Speed, the Kentucky editor of the *Southern Agriculturist*, a Nashville publication, a protest against the abolition of forestry in Kentucky was signed by the Kentucky Commissioner of Agriculture, the President of the Louisville Board of Trade, the Chairman of the Agricultural Committee of the Kentucky Bankers Association.

These gentlemen said jointly that the action of the legislature in depriving Kentucky of the opportunity for procuring Federal aid to protect forest lands was tragical. At the present rate of destruction, the signers of the statement said, Kentucky soon would be without her valued wooded areas, subject to destructive floods, impoverished, robbed of what could be made playgrounds for generations yet unborn.

The *Courier-Journal*, the *Lexington Leader*, and the *Southern Agriculturist* published the statement and commended it. There was hardly an echo from the public or from the state press. Kentucky, with some 1,800 miles of navigable streams and with 12,000 miles of fishable streams, the greatest mileage of any state in the Union, affected injuriously by deforestation; with agriculture suffering in many ways from deforestation; with building materials prices rising, went on rifling her remaining timberlands, unconcerned.

Kentucky's backward step was taken when forestry was being instituted, or had been instituted, in the adjoining

states of Illinois, Indiana, Ohio, and Tennessee. The next legislature will convene in January, 1924. Doubtless a forestry bill will be introduced. If so, it will receive the support of at least a few newspapers and of the Federation of Women's Clubs. Whether there will be sufficient sentiment for forestry among the voters, to whom legislators are responsible, and responsive, remains to be seen.

The trouble in Kentucky is the ignorance of the backwoods plus the serene complacency of the Bluegrass, a section so praised and coddled that its natives find it hard to believe that it needs any sort of improvement. I say this in sorrow, not in anger, and as a Kentuckian, not as an outsider. My grandfather crossed the mountains from Virginia, along the wilderness trail, on horseback, and spent his middle age and declining years in western Kentucky, settling in that section because it had every charm of the unmarred wilderness. My grandmother was born in the Bluegrass, in Woodford County, which "Joe" Blackburn christened the asparagus bed of the garden spot of God's Country, and I look toward the Bluegrass as a Mohammedan prays with his face toward the Caaba.

A "HEAVEN" MARRED BY DEFORESTATION

A hotel clerk in Danville reflected popular sentiment when, in response to a question as to which of two routes to Paris presented the more attractive scenery—we were taking a Philadelphia guest through the Bluegrass coun-



AN INEXCUSABLE BUT COMMON CONDITION. THE REMOVAL OF THE TIMBER COVER FROM STEEP HILLSIDES INVITES THIS FARMING DISASTER, WHICH IS A GROWING MENACE IN MANY PARTS OF KENTUCKY, WHERE "THE STREAMS ARE RED WITH THE BLOOD OF ERODED HILLS FROM WHICH THE TIMBER HAS BEEN CUT, AND WHERE FARMING HAS RUN A SHORT COURSE TO BANKRUPTCY"

try—replied with evident conviction and genuine emotion, "Either will take you right through Heaven." As a matter of fact, deforestation has marred "Heaven" deplorably. The impermanent "woods pastures" have largely become treeless pastures or pastures in which a few old forest trees, long past maturity, are dying. No replanting has been done save about residences and along private roads from county roads to residences. Roadside tree-planting, with no law to protect trees and with no public sentiment for such a law, has been wholly neglected on public roads.

Pole and line companies have pruned to death trees within the right of way, while owners of abutting property have cut their locusts for posts and larger trees for sawlogs, leaving the roads under no timber but lines of telephone, telegraph, and electric line poles. A telephone company officer with whom I discussed the mutilation of roadside trees grinned and observed: "The written rule is to trim them back 18 inches from the wires, but our foremen regard it economy of time to trim them back 18 years." In reality they are trimmed back 100 years, as many trees a century old are killed outright by the pruners.

I was reminded of the Bluegrass region recently when reading a book from my grandfather's library, written 90 years ago by an Englishman traveling in America.

GOD MEANT IT TO BE BEAUTIFUL

Of New York the Englishman said:

"We drove through a finely undulating country, in which the glories of the ancient forest have been replaced by bare fields intersected by zigzag fences. God meant it to be beautiful when He gave such noble varieties of hill and plain, of wood and water; but man seemed determined it should be otherwise. No beauty which the ax could remove was suffered to remain; and wherever the tide of population reached, the havoc had been indiscriminate and unsparing."

Strike out zigzag fences, which the Englishman despised, but which nowadays, because of the rarity of rails, we admire as we do antique furniture; substitute wire

fences, and the description fits Kentucky; fits our boasted Bluegrass—a region endowed magnificently and ravaged recklessly.

Kentucky should have, in addition to forestry laws protecting her large area of cut-over lands from fire and designed to educate farmers to appreciation of the practical value of forestry as farm economy, a roadside-tree law. It would bring into existence an average of 1,000 miles of forest trees in each county, where they would

shade 500 miles of rural highways. The trees would enhance property values, eliminate the major hardship of summer travel—the heat of sun smitten roads—and increase bird life, which, to the injury of agriculture, diminishes as farms are deforested.

The urgent economic importance of forestry to Kentucky is, of course, the chief reason why her neglect is reckless and shameful. But is the idea that abundance of fine trees affects culture a purely romantic one? Ruskin, discussing the North European, expresses an opinion which, if not convincing, is at least suggestive, when he says:

"The tremendous unity of the pine absorbs and molds the life of a race. The pine shadows rest upon a nation. The Northern peoples, century after century, lived under one or the other of two great powers, the pine and the sea, both infinite.

"They dwelt amidst the

forests, as they wandered on the waves, and saw no end, nor any other horizon. Still the dark green trees, or the dark green waters, jagged the dawn with their fringe or their foam. And whatever elements of imagination, or of warrior strength, or of domestic justice, were brought down by the Norwegians or the Goths against the dissoluteness or degradation of Southern Europe were taught them under the green roofs and the wild penetralia of the pine."

A pleasing fancy. Is it more than fancy?

Kentucky bred statesmen in the days when Kentuckians rode blooded horses under venerable oaks and between the trunks of giant tulip poplars.

Nowadays our politicians drive their automobiles be-



WHILE THESE OAKS ARE NOT "OLD ENOUGH TO HAVE SHELTERED THE DRUIDS AT THEIR ANCIENT RITES," THEY COULD BE AT THIS TIME PROFITABLY THINNED OUT FOR RAILROAD TIES, LEAVING THE BEST TO GROW UNDER STILL BETTER CONDITIONS FOR SAW-TIMBER

tween rows of telephone poles through deforested regions. And where are our statesmen?

Why is it that Kentucky's voice, once resonant and respected in the councils of the nation, does not, as formerly, challenge national attention?

Was Ruskin right?

Mark Leigh Alexander

THE cause of conservation has suffered an incalculable loss in the death of Mark Leigh Alexander, Commissioner of the Louisiana Department of Conservation. Mr. Alexander was 58 years old. He had been at the head of the Louisiana Department of Conservation since 1912. His death came as a shock to the entire state, as he had only been ill one week. On Saturday, March 10, he was taken with an attack of appendicitis. Physicians advised a speedy operation, from which he was unable to survive, and he died March 17.

Mr. Alexander was a Virginian by birth, and came from distinguished parentage, Mark Alexander, his father, having served as a member of Congress from Virginia for sixteen years, and his grandfather, Colonel James T. Alexander, of Mecklenburg County, served in the Revolutionary army. After the Civil War, Mr. Alexander went South, first settling at Mobile, Alabama, the home of his mother, who was Miss Fannie Ledyard, daughter of William J. Ledyard. Upon completing his education, he left Mobile and settled at Alexandria, Louisiana.

Mr. Alexander was appointed Commissioner of Conservation in 1912 by Governor Hall, and was reappointed by each succeeding executive, Governors Pleasant and Parker.

Mr. Alexander was regarded as one of the best conservation authorities in the South. His success as a conservationist was due to the natural diplomacy and sympathetic consideration for his fellows of every station. Trapper, hunter, fisherman, as well as fellow-conservationists, appreciated his efforts and were convinced of the ultimate benefit of the policies he advocated. Prosecutions under his administration were undertaken only where no other course was possible to check reckless waste or selfish slaughter of wild life. The result has been that the Department of Conservation is now receiving the support of the great mass of people of the state, and the waste of resources which threatened the extermination of wild life and the destruction of the forest and mineral resources has been greatly checked.

Mr. Alexander was one of less than a half dozen men chiefly responsible for the shaping of the present forestry laws of the State of Louisiana, including the provision whereby cut-over lands may be entered under contracts with the state for reforestation purposes and so benefit by considerable abatement of taxes while being used for growing another crop of trees.

Mr. Alexander was widely known and honored among foresters and lumbermen for his special interest in the problems of forestry, to which he gave much of his time and attention. The spirit of fairness, together with his recognized earnestness in the cause of progressive forestry from the standpoint of public interest, won for him high respect and friendship from the Louisiana lumbermen and was one of the most important factors in building up a strong interest on their part in practical measures of reforestation.

Mr. Alexander's work in conservation brought him a large measure of prominence throughout the country.



MARK LEIGH ALEXANDER

He was President of the International Association of Game and Fish Commissioners for Canada and the United States, a member of the Federal Advisory Board for the Protection of Migratory Game, Vice-President of American Fisheries Society, Vice-President of National Association of Shell Fish Commissioners, a member of the Executive Board of the National Conservation Congress, Vice-President of the American Forestry Association, Vice-President of the Louisiana Forestry Association, and a member of the Southern Forestry Congress.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

A Deadline for the Gipsy Moth

A DEADLINE is to be drawn against that nomadic Hun, the gipsy moth. The State of New York has just appropriated \$150,000 to be used to stop the invading hosts, which have been moving westward at the rate of 25 or 30 miles a year. A battle line extending from some point on Long Island Sound, northward to the Canadian border, and thence westward, if necessary, to Lake Ontario, is to be thrown up. This line will be almost 450 miles in length and about 20 miles in width. It will be a "no moth land," across which the gipsy ravagers shall not be allowed to pass.

Few people outside of New England, where it is now generally distributed, appreciate the destruction of trees wrought by the gipsy moth. Already it has cost the country more than \$20,000,000 for control work alone. In 1921 Massachusetts spent for control work more than \$836,000. It has been estimated that if the gipsy moth should be permitted to become general throughout New York, it would cost five and a quarter million dollars annually. The gipsy moth is the enemy of forests, old and young. With it abroad, it is practically impossible to grow many of the most valuable trees to timber size.

Twenty-six per cent of the red-oak trees in certain areas of Massachusetts have been killed by the moth during the past ten years. On Cape Cod 90 per cent of the oaks, representing 75 per cent of the forests, are either dead or in various stages of destruction. New York's control line, it is said, will be the largest immune zone in the history of forestry, and on its success depends the future of many forests, not only in New York, but in Pennsylvania and other adjoining states. In recognition of this fact, the National Government is throwing the full weight of the Federal moth-fighting forces into co-operating with New York.

New York's action in thus making available a large sum of money to stop the destructive gipsy moth is timely. No small credit is due the New York State Forestry Association for having secured this appropriation. Its expenditure will be of value, not alone to the State of New York. It will serve as a protection against the westward drift of the gipsy moth. It should inspire other states to be equally watchful and aggressive against this destructive pest.

From Old Forests to New

AMERICAN FORESTRY completes in this issue an exceedingly keen and interesting analysis of the transition of the United States from a free and easy exploitation of stored-up virgin timber to a forced and provident growing of wood as a staple crop, by E. T. Allen, Forester of the Western Forestry and Conservation Association. Mr. Allen's comprehensive articles are a significant contribution to a subject which more and more is engrossing the thought of the timberland owner as well as the every-day citizen who appreciates our forest-supply problem.

While pointing out the place which forests hold in the traditions and sentiment of the American people, Mr. Allen deals with timber-growing almost solely as an economic process, and maps out its future development primarily as an equation of supply and demand—a commercial reaction to opportunities for the profitable use of land. This viewpoint is supported by the extent to which the commercial growing of timber is already practiced in the northeastern states, to which Mr. Allen does rather scant justice. The very economic factors which the western timberland owners are beginning to visualize are creating stumpage values which have already made timber-growing a profitable business by many eastern land-owners.

As a purely economic question, however, the growing of timber has a public phase no less important than its interest to the land-owner. The timber famine is here, in the parts of the United States where the bulk of our lumber cut is consumed. The westward movement of the sawmills, which Mr. Allen describes with the interest of an epic poem about the deeds of ancient heroes, has created lumber prices in the larger eastern consuming regions which already have curtailed the per capita consumption of lumber, which today are leaving a large demand for wood unsatisfied, and which have brought bad reactions in housing conditions, standards of living, and industrial instability. Purely as an economic question, the consuming public has a vital interest at stake and is entitled to its stack of chips in the game.

While somewhat exaggerating the past dissensions between lumbermen and conservationists, as AMERICAN FORESTRY views it, Mr. Allen rightly emphasizes the need for co-operation between the land-owners and the representatives of public interest in obtaining a constructive solution. The solution ought to be a co-operative one.

The real question is, What can and should the public do to aid the sluggish movement of economic forces, which at best will but slowly, and for a long time inadequately, alleviate a national situation already grave?

AMERICAN FORESTRY is in hearty accord with Mr. Allen on the wisdom, as an immediate step, of the program advocated by the Forest Service and set forth in the Clarke bill. The main points of this program are fire protection, tax adjustments, education, and the extension of public forest ownership. Doubtless they represent as large a program of public and co-operative effort as will admit of sound progress for several years to come. Public forest ownership must blaze the trail and set the pace. Educational effort can vastly stimulate and intelligently

direct both the growing of timber and its more efficient use. Public co-operation in fire protection and tax adjustments will go far in removing two of the chief obstacles to general reforestation.

While we agree with Mr. Allen on the uncertainties of prophecy, AMERICAN FORESTRY is not prepared to say that the public should rest on its oars after this much has been done. The ultimate solution must be one that meets the clear necessities of the common welfare.

Connecticut Is Waking Up

AFTER 20 years of hesitation, the Connecticut legislature has at last passed a very satisfactory act "concerning protection from fires caused by locomotives." This act provides for the designation of danger areas along railroads, and where considered necessary by the Public Utilities Commission, on the recommendation of the State Forest Fire Warden, will require railroads to clear their rights of way, build fire lines, and put on an efficient patrol.

The fire-line provision is, perhaps, in advance of legislation secured in other states, since it provides: "The commission may also, with the consent of any owner or owners of land bordering upon such right of way, require such railroad company to plow a fire line on the land of such owner or owners, said line not to exceed ten feet in width and to be located not more than two hundred feet from the nearest track of such railroad, or to clear the brush and inflammable material from a strip of land whose outer limit shall be not more than two hundred feet from such nearest track."

This legislation is but one of numerous evidences of the beginning of an era of real forest progress in Connecticut. Although there has been a forestry association and a forester in Connecticut for more than two decades, the positive accomplishments in the forest have not been what should be expected of that state. There is today a state forester and forest fire warden, with headquarters at Hartford. Two bills for increased appropriations for forest-fire protection and for the purchase of state forests

have been before the present legislature. There is also a trained forester attached to the staff of the Agricultural Experiment Station at New Haven, who is charged with the forest research work of the state and with the work of blister-rust control. The Connecticut Forestry Association, with some 550 members, has recently employed a paid secretary.

There is much work to be done in Connecticut. Although the state now owns about eight thousand acres of public forest, after 20 years of agitation, it needs one or two hundred thousand acres of timber-producing land to grow timber and to demonstrate forestry to private owners. Connecticut needs a much more effective fire protective organization, with inspectors and with at least a small year-long personnel. Connecticut also needs a real forest experiment station, to solve the many silvicultural problems that must be answered before the private owner will make forest investments. Under present conditions, the Connecticut Agricultural Experiment Station is handicapped in its research, because the forester has so many duties connected with the State Park Commission and the actual work of blister-rust control.

The Connecticut Forestry Association, with an aggressive paid secretary, must do a great deal to introduce forestry to the schools of the state. The propaganda must begin from the ground up and permeate to every corner of the state.

By the time the next legislature convenes in 1925, a model taxation bill should be ready for presentation.

The Lumbermen's Opportunity

IT is the lumbermen's move. They have been requested to draft a bill incorporating their ideas of the form which national forest legislation should take. The request comes from the special Senate committee now investigating the urgency of our forest needs. It was made during a recent hearing before the committee in Washington, when Mr. Wilson Compton, Secretary of the National Lumber Manufacturers Association, outlined the views of the lumber industry as to the major factors in the problem of reforestation. Although Mr. Compton explained that representatives of the industry had been consulted in the drafting of both the Snell and Clarke bills, Chairman McNary stated that the committee

would like to have before it a bill that expresses exactly the forestry ideas of lumbermen familiar with the needs of the lumber and wood-using industries.

Needless to say, the lumbermen's bill will be looked forward to with keen interest. Lumbermen are frequently criticized for not taking a more definite and aggressive stand on questions of forest replacement, particularly that of a National Forest Policy. They are sometimes charged with being obstructionists in the path of forest progress. That is not a unanimous view, but it exists in some quarters, nevertheless. Unfortunately for the industry and for forest progress, the old lumber-trust idea has by no means been dispelled. The public is not

yet sure where the lumber industry stands. The Senate committee's investigation is the lumbermen's opportunity. It is to be hoped that they will meet it and will come forward with a definite and constructive program, which will

let the public know where and how they stand, and which will be a contribution to the cause of American forests worthy of the great industry which American forests have created.

The Ghost of Light Burning

PIUTE forestry has failed to prove its case. It has done more. It has shown itself as great a failure in modern progress as the Indian standards of agriculture and stock-raising. By Piute forestry, we refer to the practice of light burning annually the western woods, claimed to have been originated by the Indians as a means of preventing periodical holocausts. It will be recalled that during recent years this practice of light burning the yellow pine woods has been revived by certain land-owners and others and put forward as the most practical method of solving the forest fire problem in the yellow pine forests of California and Oregon. For several years intense controversy has centered around this contention, the advocates of which claimed that light burning of the woods, done under favorable circumstances, would do little or no damage to living trees, that its intensity depends upon the inflammable debris accumulated in the woods, and that complete prevention of fire is impracticable.

Three years ago a temporary truce in the controversy was declared, until a joint committee could make a scientific study of the merits of the conflicting contentions.

This committee consisted of representatives of the Pine and Redwood Manufacturing Associations, the University of California Forest School, the State Board of Forestry, the Southern Pacific Railroad, and the United States Forest Service. After three years of study this committee has now made its report, which seems so conclusive as to lay the ghost of light burning to rest for all time to come. It found that light burning, whether done in the spring, summer, or fall, is impracticable for one reason or another. It did not locate any burns, however light, which failed to do some damage either to reproduction or to mature timber. In short, the committee, after three years of study, was not able to find or to work out a fire protective method based upon firing the woods, which is more practicable and economic than that now practiced in the National Forests.

Supporters of the theory of light burning now admit, it is claimed, that the theory is wrong and that the issue may be transferred to the closed file. All of which proves once more that we cannot raise timber with a flaming torch.

Mr. Alexander's Successor?

MARK LEIGH ALEXANDER, for eleven years Commissioner of Conservation of the State of Louisiana, died in New Orleans on March 18. In him forestry lost an able and enthusiastic advocate. Mr. Alexander rendered the cause of forest conservation generous service during the latter years of his administration. Louisiana's reputation among the southern states as a progressive advocate of forestry rests in no small measure on his efforts.

As Commissioner of Conservation, Mr. Alexander presided over the conservation of five important resources: oysters, fish, game, minerals, and forests. Of these the annual value of the minerals alone is comparable to the annual value of the products of the forests, and the latter value easily exceeds the combined value of the four lesser resources. The mineral resources, which at the present time are chiefly oil, gas, and sulphur, are of course non-renewable, while the forest resources can, if rightly handled by their owners under equitable laws, be made indefinitely productive. The overshadowing importance of forest conservation was clearly expressed by Commissioner Alexander in more than one public speech during the last year of his administration.

Great interest attaches to Mr. Alexander's successor. Will he be a man with Mr. Alexander's broad perspective, who recognizes that the most important and most permanently fruitful branch of his work is forest conservation?

Or will he be a man whose primary interest is in oysters, or game, or fish, or minerals? And if so, is not forestry in danger of the same eclipse from which it has so often suffered in the United States? That eclipse occurs when forest administration is bound up with the administration of resources for which it is comparatively easy to secure large funds, and which for that reason assume in the public and the politicians' eyes an importance entirely out of proportion to its benefits. An annual budget of \$86,000 for game conservation from hunting licenses may not be a cent too much, but certainly \$60,000 for forestry is very much too little on a comparative basis. Yet these are the sums available in Louisiana for the purposes named.

The lumbermen of the United States have been attacked in times past for many deeds for which they were not primarily responsible. One charge can be fairly laid at their door in recent years, and in fact has been laid there by the more far-sighted of their own number. This is the failure of so many of them to interest themselves in a constructive way in forestry matters, particularly the administration of the forestry laws of the various states. It remains to be seen whether the Louisiana lumbermen will bestir themselves vigorously in behalf of the appointment of a Commissioner of Conservation who will give forest resources their rightful place in the state's conservation work.

"I, Slim Spruce"

BY CLAY PERRY

I AM Slim Spruce, lineal descendant of the Great King Spruce.

Long ago my father told me I was born for a noble destiny.

Born and reared amidst the majestic company of my royal kin, my proud crest waves high above my neighbors, Jack Hemlock, Tom Tamarack, Billy Balsam, Pete Poplar, and even burly Prince Pine. It had done so for half a century. At my feet flows the Roaring River, monarch of streams, dashing down from the royal monarch of mountains, old Sprucetop, kingdom and throne of my royal line.

For centuries the Spruce family has reigned in the Kingdom of Forest, undisturbed, ever rearing proud crests above lesser brethren, aspiring high to a Place in the Sun—and reaching it—growing straight, slim, and tall, but never at the expense of strength. Our fibrous bodies are firm and well knit, supple and tough; nor at the expense of beauty and grace. Our rounded branches are adorned with a fine fringe of royal green.

With tenacious feet digging deep into rich forest mold, product of weaker families that have yielded to the fierce attack of Storm or insidious decay of Time, roots reaching cunningly down to the subsoil and to drink of the sweet, life-giving elixir, water, to flood our veins with sap of life, we have grown high, with graceful, tapering trunks, fine-arched limbs, nodding plumes and tassels.

Comes Man, the laborer, the thinker, the giant ant of industry. He takes away Prince Pine and his brothers, and his body is sawed and split and smoothed to make planks and boards for building bridges, mills—ignoble use, indeed, for a noble family; but we, scions of King Spruce, know that such fate is not for us. Something finer, nobler is our destiny.

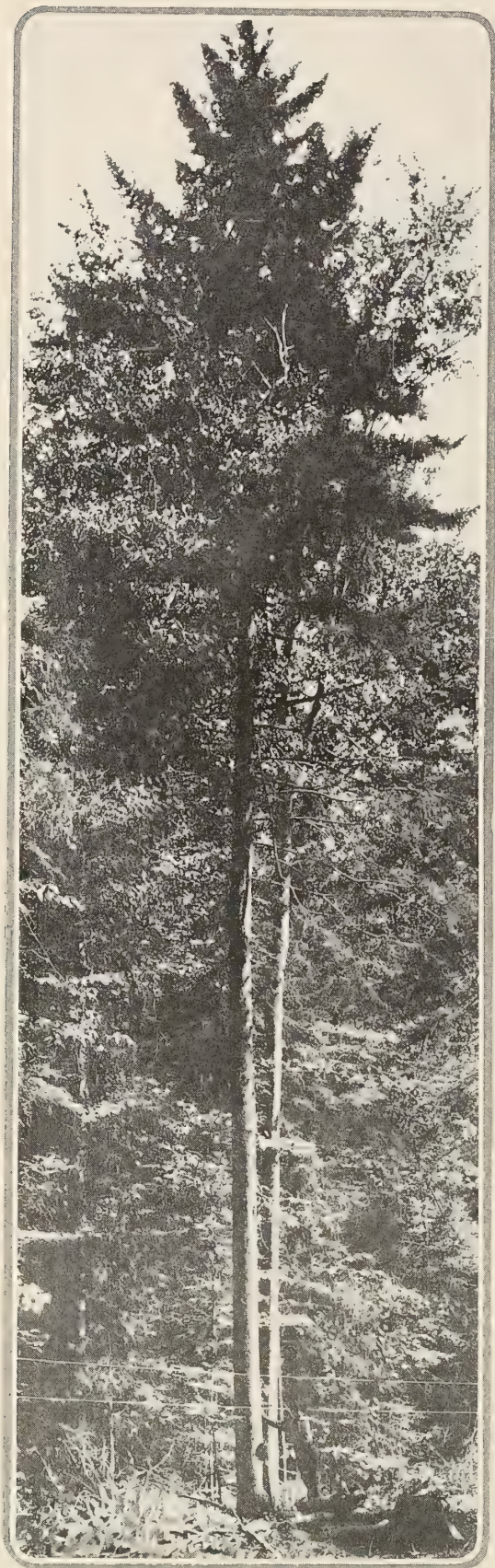
Jack Hemlock next is taken by Man to make huge timbers to build a dam that checks the royal rage of Roaring River and directs him through sluices and into dark tunnels, where he is forced to labor, turning wheels and spinning snarling saws. Ah, the Saws!

We of the Spruce Line feel the sullen recoil of Roaring River, as he strives to withdraw from these slavish uses. His back rises like that of an angry mountain lion—higher, higher. We feel it on our feet, rising; but now he yields and sinks low, submissive, giving his heart's blood for the work of the world of Man. He has found his destiny.

Then all is done; the mills are builded. Man brings his hordes into the very heart of the domain of King Spruce. He builds cabins, shacks, stables; fetches horses, belching engines, many tools of steel. We shudder in all our limbs, but, stoical, stand firm, apparently indifferent to this threat.

Then one day, when Snow buries deep the forest floor, Men come and attack our unbroken, serriced ranks, and we fall—by the dozens, the hundreds, we fall, crashing with majestic thunder, to the ground, bearing with us in our fall lesser trees, and now and then we pin beneath our great bodies the puny Men who attack us.

Steel bites our firm boles and hacks holes and our hold weakens.



We fall. More weapons of steel decapitate us, hew off our limbs, denude us of all save our clothing of bark. But our bodies hold together, fibrous, tough, despite mutilation, for we know that a noble destiny is ours.

I, SLIM SPRUCE, lie amid my brethren in great piles Men call Logs. Our sap is congealed, frozen. Then comes the Sprite Spring, with magic breath, and releases the bonds of the river and softens our stiff bodies, still alive, resilient, resistant. Man tumbles us into the river. The Roaring Monarch is to bear us to his place of confinement and labor, as he did Jack Hemlock and Prince Pine. Long before I come to the place called The Mills, I hear the savage snarl of the Saws, a man-made beast.

Some of my brothers cry out, in water-soaked voices, but I hold my peace, secure in my belief in destiny. Man harries and stabs us with hooks and pikes, as they hurry us down stream and drag us out and pile us on cars that run on steel tracks—royal carriage for a royal line.

Sound of the Saws, roaring with metallic hunger, rings in our ears. We are dumped on a carriage fashioned of the body of Jack Hemlock! Then, with exquisite, tearing pain, the teeth rip flesh and cut through me; and now I become less an entity than a confusion of particles, yet retain the unity of those strong, fibrous muscles.

Yes, even beneath the driving, splitting crash of steel machines that tear us apart, rip our skin, sharp knives that mangle and macerate, we keep our unity. We are of the royal line. Fiery smells speak of hot torture, and soon

we are being cooked in a caldron, in biting chemicals, until our bodies are a soft mass—pulp, they call it, these Men. It is our fibers, clinging, intact!

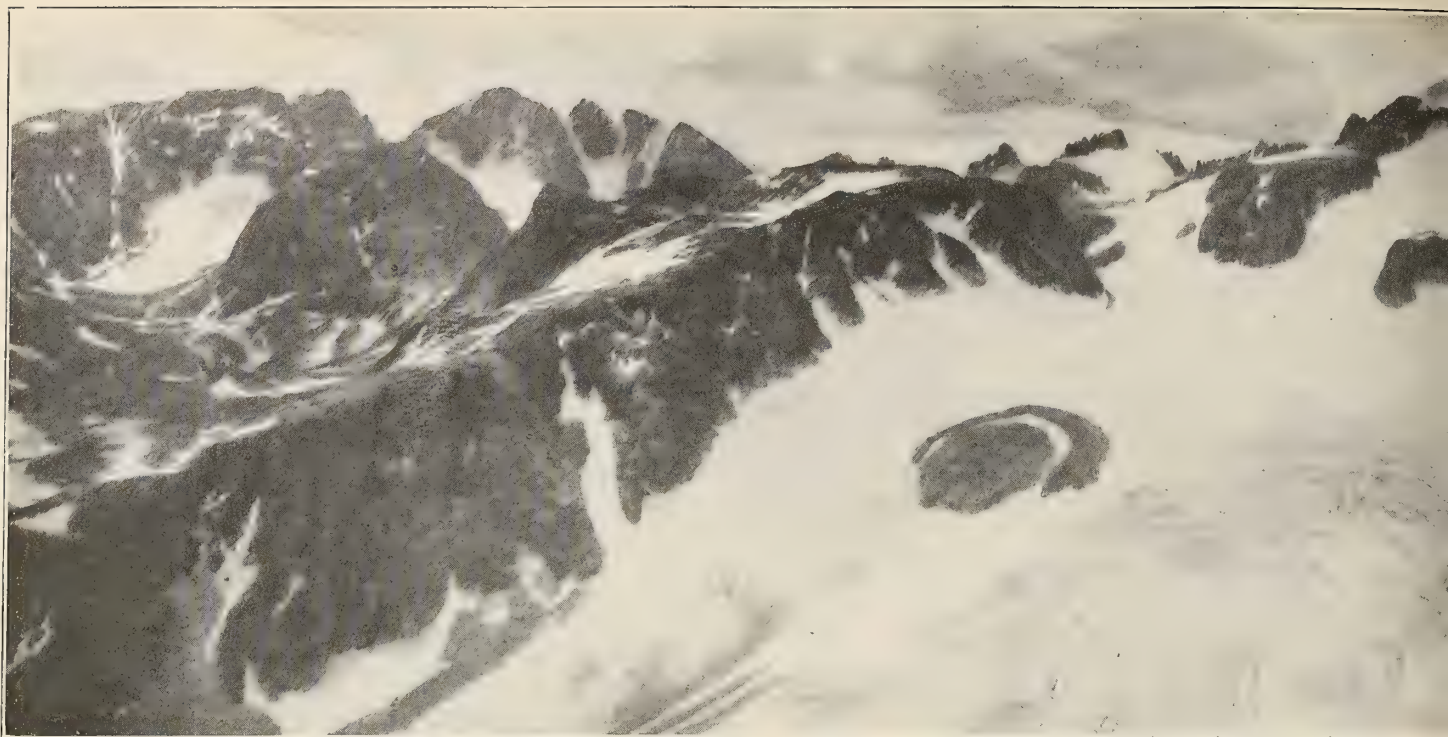
Out of the caldron we come; enter vats; are beaten, pounded, mangled, and bitten by more chemicals, that turn us pale; but we cling together, invincible, unconquerable, save by Fire, alive. Between rolls of wood that squeeze from us our life blood, but also rid us of stinking chemicals, lo, we emerge, a beautiful, soft sheet of white!

DRY Pulp, Men call us. With careless, irreverent hands they bend and fold us and on trucks send us to another mill; and then again the vats, the biting chemicals, the squeezing rolls; and thus are we doubly refined; and still we cling tenaciously to life, and again become a long white sheet; but now Men speak no longer of us as Pulp. They use another name, with tones of deep respect and admiration, and I know my destiny is being fulfilled.

Paper, they call us now—White Paper, News Print. They speak of "the splendid fibers of King Spruce"; how tough and smooth is the texture of the great white log into which our fibers, all straightened, bleached, and pressed flat, are being wound—a white log as large as my majestic trunk as it stood in the forest!

I, Slim Spruce, have become White Paper, News Print; and here you have me, with my life history written upon my own tough, living fibers, and my noble destiny is fulfilled.





EXPLORING GLACIERS IN T

MIDWAY between Yellowstone National Park and South Pass, through which the early pioneers toiling westward blazed the overland trail to the Pacific, the Wind River Range of the Rocky Mountains flings up its rugged crest to form the two highest peaks in the State of Wyoming. They are Fremont and Gannett, both of which are over 13,700 feet in elevation. On their eastern flanks are glaciers, perpetual snow-fields, and deep canyons separated by ice-scored ridges. Swift-flowing streams, colored in midsummer with the soft greens of glacial flour, emerge from all the valleys. For almost one hundred miles these Wind River Mountains, extending southeastwardly from the Yellowstone National Park, form one of the highest and most inaccessible ranges of the Rockies. Its crest seldom drops below 11,000 feet in elevation and many of its peaks reach well above 13,000 feet.

Here is a man's country—a country so rough and impenetrable that it has baffled many a hardy explorer and pioneer. During the immigrant days it became a sort of backwater, into which settlers drifted very slowly, haphazardly or not at all. To this day it has so remained. It is one of the thinnest populated regions in the United States. The mountains are as wild as always, as inaccessible as when Bonneville and Fremont found them, nearly a century ago. To visit their canyons, lakes, glaciers, and peaks is to share a good deal of the difficulties and impressions of those early explorers.

The higher summits of the range are within the Washakie and Bridger National Forests, but because of the ruggedness and inaccessibility of the region it is practically without administration. Few have ventured into the fast-

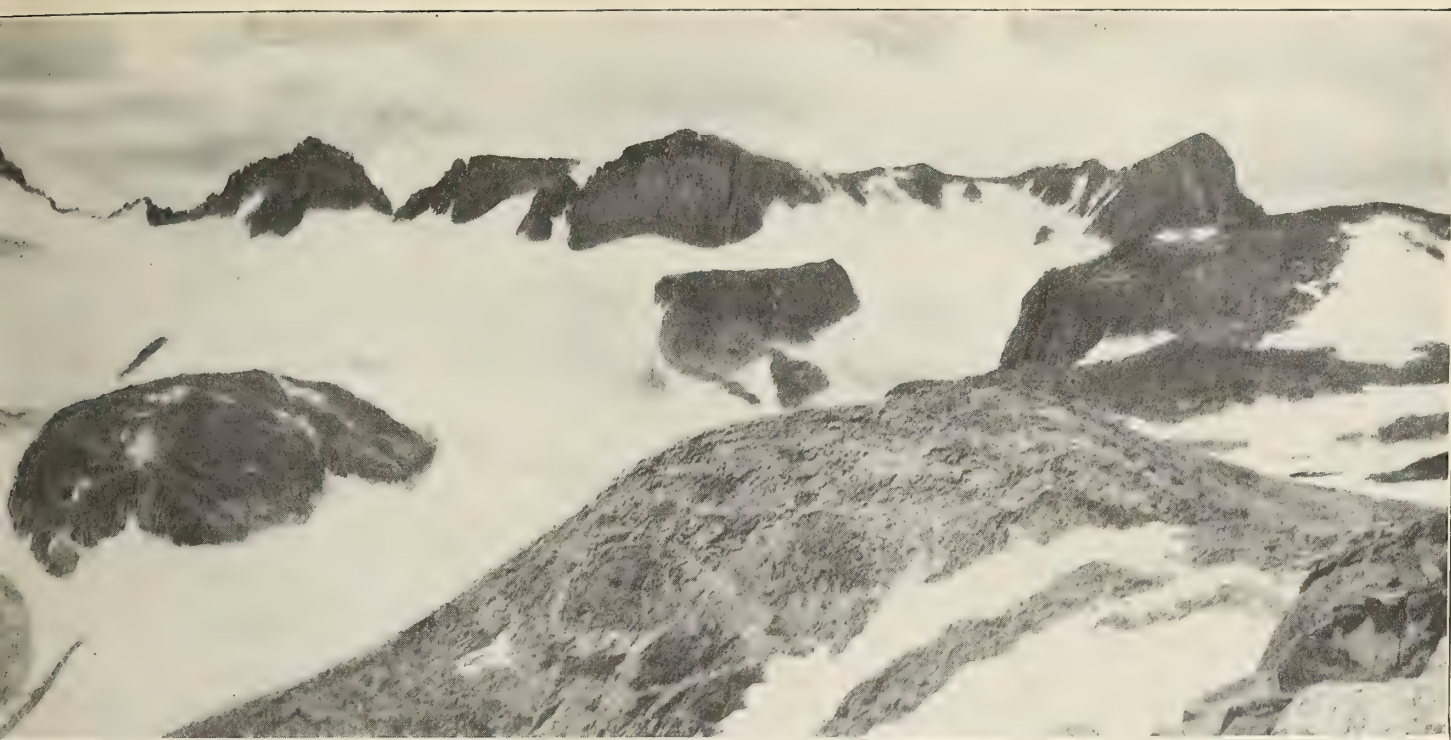
nesses of this far country and they have been only the most hardy and venturesome.

There are no trails for the ranger, and even the stockman, ever on the search for new ranges for his herds, has not ventured further than the first uplift. Occasionally a few Indians from the Shoshone Reservation, to the eastward, drift into portions of this high back country in the short summer months.

During the summer of 1922 Forest Ranger H. N. Kleiber, of the Washakie National Forest, with a party of companions, set out to explore the mountains and glaciers at the head of Bull Lake Creek. "The roughest part of the region—from Jakey's Fork on the north to Mount Chauvenet and Mount Bonneville on the south—is practically unknown, except possibly to a few Indians," writes Mr. Kleiber. "And the roughest portion of this rough area is probably at the head of Bull Lake Creek, where it is believed the largest glaciers of the region are grouped, between Mount Helen and Fremont Peak. It was my good fortune last summer to be a member of a small party outfitted by the Lander Commercial Club under the direction of Mr. E. H. Fourte, an old resident of Fremont County. The purpose of the expedition was to make a rough reconnaissance of the glaciers at the head of Bull Lake Creek and to verify, if possible, some of the reports which for years had been passed around locally, hearsay fashion, as to the wonders and mysteries of this high unknown country.

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*Story of a Trip into the
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WIND RIVER MOUNTAINS

of One of the Roughest of the Rocky Mountains

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"I do not think that any one has visited the Milky Lakes or approached the glaciers from below, within recent times, at least. I figure that no white man can make a trip into this country and not leave some tangible evidence of his having been there, because the routes of travel are so limited and difficult that several days must be taken for the trip. We saw no ax-cuts, the remains of old fires or camps, though I did find some old evidences of Indians.

"Our party merely skimmed the country. Some of its members had too little time at their disposal to explore extensively. This was a very serious drawback. We merely followed what, after a hasty survey, looked like the quickest and most logical route to the glaciers and noted the most outstanding features. We did not penetrate the south glacier for over a half mile. Its limits were beyond our vision. Of the main glacier we could not even see the snout and probably never got closer than within a mile of it. None of the surrounding peaks were climbed and there is no record showing that they have ever been scaled. Many of them have no names. But the

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"August 23—We arrived at the JK Ranch, fifty miles from the railroad at Lander, by automobile, and at once began to make arrangements for saddle and pack horses and to assemble and cargo our provisions.

"August 24—With the assistance of the packers and guide, we assembled the horses, about thirty of them, and drove them to the Kirkland cow camp on Little Willow Creek, some ten miles above the ranch, where we spent the afternoon selecting the horses, arranging the packs, and planning the exact details and route of the trip.

"August 25—The morning broke clear and cool. Considerable trouble was experienced in packing the stock, and one horse scattered his pack over a mile of sagebrush, just as we were about to start. We left the cow camp at 9 o'clock. As most of the horses were strange, the cavalcade did a lot of milling around, and progress ahead was very slow. Five miles up the first slope the pack-horse loaded with the photographic paraphernalia became unruly and ditched most of his load. It looked serious, but on gathering up the equipment it was found that no damage had been done. At 2 in the afternoon we arrived at the summit of the first uplift, an elevation of some 10,000 feet, margined by a rim-rock of Bighorn Limestone. The climbing so far had been steady and steep, but not rough. The narrowness of the trail which we struck in the timber halfway up proved hard on the packs.

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their way. The trail had vanished. A scrubby stand of limber and lodgepole pine, in places burned over, projected stubby fingers that tore at packs and added to the difficulty of trailing along a big string of pack-horses. Soon we encountered the granite, which continued as the country rock. The going became better, in spite of burned and fallen timber, and we passed a rude, sizable shelter made out of small trees and stacked limbs. The guide told us that this hut had been built years ago by the Indians, when they used to come up in the fall after limber pine



Photograph by Sanford Mills

MILKY LAKE AND ITS ROUGH SETTING, NEAR THE HEAD OF BULL LAKE CREEK



Photograph by Sanford Mills

MASSSES OF ALPINE FLOWERS, GROWING NEAR THE GLACIERS AT 11,000 FEET, RICHLY COLORED MANY SLOPES

seed, which they gathered as a supply for winter food.

"About 4 o'clock we entered a big grassy park located on the head of a small tributary of Bull Lake Creek flowing off to the south. Since no member of the party was acquainted with the country further on and the meadow offered abundant horse feed, we decided to camp for the night near a convenient spring of icy water. A thunderstorm growling overhead hastened the preparations for the night. After a hasty supper I told the others that I would scout ahead on foot and try to determine a trail to be

followed the next day. Two miles brought me to the upper limit of the timber and to the top of the divide between Bull Lake and Meadow creeks. But a similar distance beyond high, bare ridges shut off the view to the west; so I climbed them, to find still higher ridges beyond, and I gave up the attempt for the time being, returning to camp after dark, but blazing a faint trail through the timber as I went. We had made only ten miles this day, but it had been sufficiently full and tiring to all of the party who were unaccustomed to horseback travel.

"August 25—Another clear



Photograph by Sanford Mills

LOOKING DOWN INTO THE NORTH FORK OF BULL LAKE CREEK, SOME OF THE ROUGHEST COUNTRY IN THE WIND RIVER MOUNTAINS



Photograph by Sanford Mills

RANGER KLEIBER AND THE PHOTOGRAPHER TAKING PICTURES ON THE SOUTH GLACIER

morning and so cold that ice had formed overnight in the water-buckets and around the margin of the spring. We were on our way by half-past eight. The first two miles through the timber to the top of Meadow Creek Divide proved very rough, the pack animals scattered on us, and we did not strike the trail blazed out the night before until we were almost on top. Many bear signs were seen in the limber pine belt. Crossing the divide at timber-line, we struck out northwesterly across a broad swale filled with dense thickets of Arctic willows. Bog-holes, concealed boulders,



Photograph by Sanford Mills

A MORE DISTANT VIEW OF THE SOUTH GLACIER, WHICH THE PARTY REACHED WITH MUCH DIFFICULTY



Photograph by Sanford Mills

THE NORTH FORK OF BULL LAKE CREEK, NEAR WHERE TWO GLACIAL TORRENTS UNITE

and willows caused a lot of milling around before the party, well strung out, reached the low ridge on the further side and turned west once more along the Meadow Creek side of the divide. Obstacles to fast progress of all kinds were met—boulders, gravelly ridges, glacial debris, small rock-slides—and winding about with the pack-train was tedious and slow.

“Many stops to untangle the horses were necessary, and the idle members of the party used them to examine the Alpine flora, which at this altitude, nearly 11,000 feet, had just passed its period of greatest

bloom. Some of the higher slopes were still full of riotous masses of purple daisies, paint brushes, primroses, kings crown, and gentians. A pale-green flowering gentian, growing in clusters among the rocks, proved of unusual interest. A few especially gorgeous patches of it were photographed. Toward 3 o'clock the party reached a saddle in the divide between Bull Lake and Meadow creeks, and ascending the further slope to the top, the first full view of the Bull Lake glaciers broke on our sight. All were deeply impressed and paused as long as

possible to drink it in. The scene possesses all of the charm that boldness of outline, distance, transparency of atmosphere, breadth and color can possibly bestow on any landscape. The ice-fields extend for miles along the crest of the Divide and, glistening in the afternoon sunshine, form the crown jewels of an immense and awful panorama that is the heart of the Wind River Mountains.

"We had gone this day about as far as tired horseflesh could carry us, and, slowly leading the weary pack animals down, we looked for a camp site in several small swales on the rim of Bull Lake Canyon, where we found firewood and could pack up water from a near-by rocky gulch. Abundant horsefeed for a several days' stop was afforded, and the remainder of the party was signaled to descend to the canyon rim, just at timber-line, and camp was made close to the very edge, looking down into Milky Lake, at the very bottom of the gorge.

"After a bite of supper and a study of the Geological Survey sheets, I determined to explore a little, to see if the ridge from which we had obtained our first view would not lead us westward and up to the main Divide, on whose east slopes the glaciers lay. Apparently, this ridge, the divide between the headwaters of Bull Lake, Dinwoody, Dry, and Meadow creeks, was continuous, and, if so, would provide our route for the next day, as the Bull Lake Canyon floor was patently impossible for horse travel. Crossing the ridge above the cirque at the head of Meadow Creek at 12,740 feet elevation, the going proved to be very slow. Immense boulders, rock-slides, and snow impeded progress, and all vegetation was absent; yet in passing over a rock-slide I stampeded a band of

mountain sheep, which took off at top speed toward Dry Creek.

"The ridge so far had held out very well, but approaching the point on the Survey sheet named Indian Pass further progress upwards became impossible. The divide narrowed and the 'Pass' consisted of a steep gash in the rocks, almost straight-walled and 500 feet deep, gnawed out by the streams that head against both sides.

Disappointed, I turned to the view for consolation. On the right towered the Chimney Rocks, on the head of Dry Creek, and their 13,000 feet of crags just hid from me the top and upper slopes of Gannett Peak, the highest mountain in Wyoming. The sun was just below the horizon and the dusky gloom, every minute growing deeper, mysteriously veiled the tremendous outlines of noonday. The Bull Lake glaciers lie to the south, and in the evening light their fields spread out like an immense fingered hand. Huge torrents, gushing forth from the glacial snouts, appeared as tiny threads of white, gradually darkening as they enter the gloom of the gray canyon walls and the timbered shores of the creek swallow them up; but the distant roar



Photograph by A. C. Tate

OUR CAMP IN UPPER DINWOODY CANYON, TWO MILES BELOW GANNETT GLACIER

of the main stream came faintly up to me on the evening breeze. Farther south the horizon, backed by the crest of Fremont's Peak, is a mass of snow-flaked summits.

"I picked up an arrow-head, which some dusky warrior in times gone by had doubtless shot at a mountain sheep, and again returned to the view. But night was falling, and, retracing my steps to camp, I found the way hazardous enough, jumping and slipping from boulders and

dodging falls down the precipitous slopes on all sides. The party was turning in for the night.

"August 26—The morning was warmer than yesterday and the cook was out with an early breakfast. I discussed with the others what I had seen the night before, and it was decided that four of us would explore the possibilities of reaching the glaciers on foot, over the Bull Lake Creek Canyon route, while the rest spent the day taking in the view from Indian Pass. So, taking a small lunch, we dropped over the canyon rim, descending, and in two hours' time we had reached the east end of the upper lake. The water is of a light turquoise blue, opaque, and reflecting images from its surface like a mirror. The constant supply of rock flour from the glacier above prevents it settling up. Canyon walls, boat-like rocky islands, and the clouds above were perfectly reflected from the bosom of the lake. A somewhat larger lake, lower, is joined to the upper by two booming falls, although from the camp site of the night before the two lakes appear as one. The rock basins of both were scooped out by glacial action of another period.

"Detouring on the north shore of the upper lake, progress was very slow. A large stream enters at the upper end, spreading out into the lake waters a curious fan-like delta. The valley bottom above is very narrow, and one has to choose between marshes covered with tall grass and deceptive potholes and almost impassable willow thickets. We took our share of each. Patches of timber are scattered along the route—spruce on moist ground, lodgepole pine and limber pine on drier spots, and occasional aspens among the rocks. After the middle of the day the

marshes and willow thickets alike become flooded as the glaciers melt more rapidly, and one has no choice but painfully picking a way over precarious rock-slides against the canyon walls. We put up a great many mallards and teal along the way, and I judge the ducks raise their young in the shelter of the marshes. The tall grasses and willow thickets provide ample concealment from men, but feathers and bones made me think they are subject to

frequent raids from foxes and marten.

"At noon we had arrived at a forks where two glacial torrents, one from the south and one from the west, unite to form the main stream that we had been following. We were unable to judge which of the forks bears the most water, both being strong-sounding streams racing along over boulder-strewn beds. We ate our frugal lunches, and after a discussion decided to make the effort to reach one of the glaciers that afternoon, especially as I had seen last night from Indian Pass that the south glacier would be the easiest to find. I led the way. It became necessary to cross the stream, and in felling a sizable spruce as a footlog, with only a hand ax, two hours more were consumed. An hour more of fair going

and we reached the snout of the glacier. Making a brief examination of the snout, the moraines, and the issuing stream, a few photographs were taken, and we turned back. Another arrow-head was picked up.

"For some distance below the glacier the Alpine flowers were still in bloom, especially masses of heather, with blossoms partly wilted. At the forks above the main stream were quantities of blueberries—dense, low bushes, growing on the edges of marshes. We ate freely of the



Photograph by A. C. Tate

DOWN'S LAKE, 10,600 FEET ELEVATION, FROM A POINT ONE MILE ABOVE THE OUTLET



Photographs by A. C. Tate

Upper—SOUTH GLACIER AND OVERTOPPING PEAKS, PHOTOGRAPHED ON CLIMB TO THE SUMMIT OF GANNETT PEAK
Lower—DINWOODY CANYON, WITH GANNETT PEAK, THE HIGHEST MOUNTAIN IN WYOMING, IN THE DISTANCE

bright, blue fruit. By this time the party began to show signs of weariness. The day had been fatiguing, and as evening came on our progress became more and more painful and slow. We could not dodge the bog-holes of the morning. I aimed, however, to get far enough down the canyon so that our fire would be seen by the men at the rim-rock camp, and as we came out of the last patch of timber above the upper Milky Lake we caught sight of the camp-fire on the canyon wall above. After grubbing about in the darkness, enough pitchy roots were gathered to kindle a fire, to show the others where we were. The night's fuel supply was collected, we dried our wet clothes, and bedded down around the fire as best we could.

"August 27—At daybreak we straightened our stiffened limbs and decided that two of the party should ascend the cliffs to the rim-rock camp, discuss the situation with them, and arrange for those who desired to make the glacier trip to return with proper equipment and food for all. It was arranged that, in case no one wished to make the venture, a signal should be given us, so that we could finally rejoin the party on top. I felt that a climb out of the Bull Lake Creek Canyon,

following the trip to the ice itself on the previous day, would tax the staying power to the limit of the ordinary man, and I was anxious to avoid twice making this climb, if possible. However, soon after 8 o'clock several pistol shots were heard, apparently the signal that no one else planned on ascending to the glacier, and the climb back to the rim-rock camp was begun. With the idea of finding a better route over the canyon walls than had been followed in coming down and possibly the site for a government trail later, a new place was chosen. Better going was found, but nothing that would indicate any possibility for a good trail location, and we arrived at the base camp about 11 o'clock.

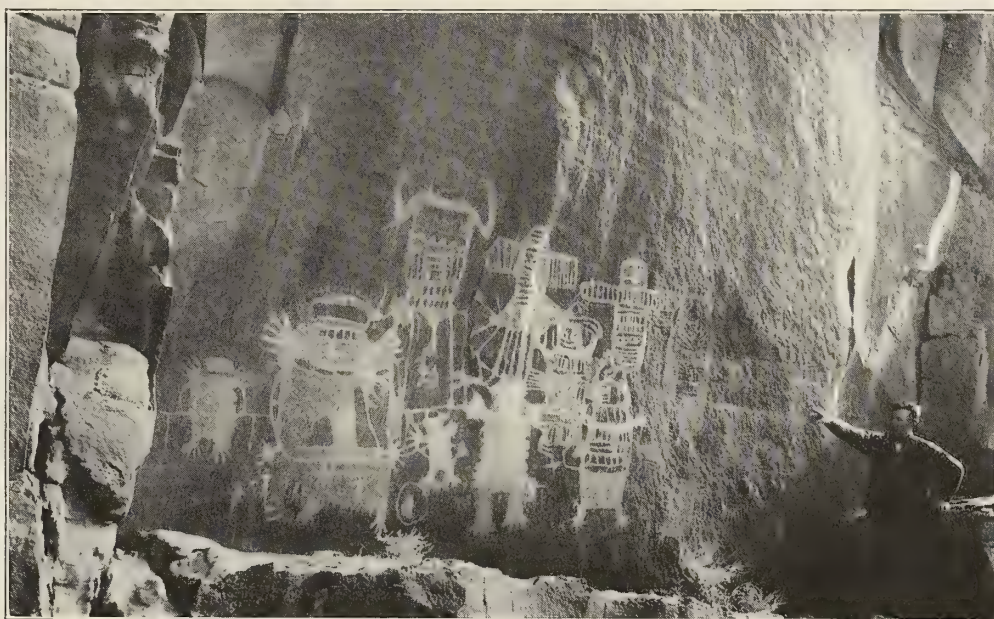
"But the shots had not been signals, as I thought; some of the party had been at target practice, and our daybreak forerunners had not yet shown up. Anxiety was felt as to their whereabouts, but we were in no condition to search for them, my companion even having been obliged to rest from his climbing half way up until refreshment could be sent down to him. However, every one finally showed up. After several hours' rest, we began again to

plan, and the great difficulties of a trip to the snow-fields were plainly set forth, with the result that but one of the remaining party decided to return with us. Preparations were thereupon made for an early start the following morning.

"August 28—Three of us left the rim-rock camp about 7 o'clock. I carried a back pack of thirty pounds, as did Mills, and the photographer was equally laden with a more cumbersome paraphernalia. We descended to the upper lake by the route of yesterday, coming out just above the lake. Many stops were made for pictures, but good progress was made in spite of numerous showers that thoroughly soaked us. The crossing through the willow thickets was worse than before, and we wore not a dry stitch when we paused for lunch, near noon, just above the creek forks, under the shelter of heavy spruce

trees. It was a stormy day, with occasional breaks in the clouds, and by 3 o'clock we reached the glacier.

"Working our way along the snout to the terminal moraine, we finally climbed the face of the glacier, which was some 300 feet high. The morainal material pushed out by the ice was astounding in



Photograph by A. C. Tate

CURIOUS INDIAN CARVINGS SEEN ON ROCKS AROUND DINWOODY LAKE

quantity and in the huge size of the aggregates. The lower end of the ice was covered with boulders, and following the rain the glacier surface was dirty and gray. Thousands of small troughs and ice crevasses seamed the ice, radiating fan-wise toward the snout, and from the hurtling waters below the air pulsated with the uproar.

"Progress had become a difficult matter. None of us had spiked shoes, but I finally bettered my shoe packs by tying rope around the instep, and so kept from sliding entirely into the troughs. The main mass of the glacier was apparently solid ice. We must have gone fully half a mile back from the face. The glacier extended at least two miles south, pitching yet further, out of sight, in a sort of anticlinal fold; and to the west it was the same. Banked against the terminal moraine is a slender wall of ice some 500 feet high, from a tributary glacier to the west. All presented metallic tints of blue and green, with a somber dullness created by the encasing granite walls of the underlying and limiting rock.

"By the time it was too dark to make further photo-

graphs our feet were numb with cold; and, hard as the ascent had been in full daylight, the descent was even more arduous, and it was a relief to stand again on solid ground and feel the blood once more in our chilled legs and feet. The night's camp was made once more in the spruce thicket at the creek forks.

"August 29—This day we planned to make a flying trip to the west glacier, more especially as the weather was now fine. We kept close to the north side of its creek and found the going much steeper, at first, than in the other gulch. A series of shallow rock basins, occupied with small ponds, were passed, the valley broadening and affording comparatively easy traveling. After two hours of this we obtained a good view of the scene ahead. There are two separate streams of ice—one, long and narrow,

extending down some three miles east from the Divide and hemmed in by precipitous rock walls, with a well-defined terminal moraine. To the south is the largest glacier seen, judging from the size of the torrent issuing from the snout, and apparently it joins the south glacier visited yesterday. A ridge near the south cuts off the view enough to prevent a complete estimate of its size, but the scope of country that is ice-covered indicated that it is very large—larger than the maps in any way indicate.

"But our time was up, and, retracing our steps to pick up the equipment left at the forks, we reassembled our full party at the rim-rock camp by half-past four. And the next day, late, without further adventure than a good wetting in a mountain thunderstorm, the trip was completed at the JK Ranch."

Forestry Because It Pays

A. C. Goodyear, president of the Great Southern Lumber Company, says: "The owners of the company with which I am connected believe in growing timber and we practice that belief. We have embarked definitely upon a policy of leaving our cut-over land in a productive condition and protecting it against the two great enemies of young growth in the South—hogs and fire. Our policy is not the product of impractical idealism. It is the healthy offspring of business necessity—an adopted child, if you like, but adopted because it pays." Private forestry in the United States will make great strides when, and only when, the owners of forest land become convinced that it pays. It now seems that some of the more progressive companies are convinced that it pays and are starting in.

Visit Your National Parks

"Secretary Work is with us," says Robert Sterling Yard, Executive Secretary of the National Parks Association, in issuing the following invitation from Secretary Work to the American people:

"With a lavish hand nature has molded throughout our land the most magnificent and awe-inspiring scenery, surpassing in beauty and grandeur that offered by any foreign country. These spots—our National Parks—have been set aside by the American Government, to be maintained untouched by the inroads of modern civilization, so that you and your children may enjoy them. Roads have been built through deep-cut canyons, across towering mountain ranges, beside rippling streams filled with fighting trout, and into primal forests. Hotels and camps have been erected to provide comfortable accommodations in the most distant and inaccessible places. Free camp grounds have been provided for those who wish to bring their own equipment and camp out. These unspoiled bits of native America are for you. They are the playgrounds and the recreation parks of the people. To visit them and see them is to inspire pride and make more real your love for America. In the name of the Government, I invite you to be its guest."



THE DENMARK ELMS

This picture teems with interesting history, according to Mr. H. W. Hengston, of Port Madison, Iowa, who nominates the trees for the Hall of Fame. They are white elms in the village of Denmark, Iowa, and while Deacon Trowbridge was in the act of planting them, in 1865, a courier galloped up, brought his horse to a stop, announced the assassination of Abraham Lincoln, and passed on. The church also is entitled to historic distinction as being the finest organization of the Congregational Church west of the Mississippi River. The first building was burned during the Civil War and replaced by the present structure.

California Forestry Students Build A Unique Meeting Place

ON a balmy night, just before the day of the "Big Game," November 24, to be exact, and by the light of a lively "camp fire," the forestry students of the University of California dedicated an open-air meeting place that is as unique as it is appropriate and useful. It is known officially as the "Foresters' Circle," and consists of eight redwood logs, each about 40 inches in diameter and ten feet long, laid horizontally to form chords of a 26-foot circle. All of the work was performed by members of the Forestry Club, and it was not a small task, for from each log they had to hew about one-fourth of its great bulk to form comfortable benches.

In the center of the circle is a hearth, or open fireplace. The setting is in a grove of eucalyptus trees close to Hilgard Hall, the home of the Division of Forestry, the grove itself being an impressive feature of the California campus, the trees towering over 165 feet above the "Circle," although less than 40 years old. There are thus represented in this outdoor theater two of the

world's largest trees—California redwood and Australian eucalyptus.

The dedication was made the occasion of a reunion of the graduates of the Division of Forestry. Earlier in the day these men met and organized an alumni association, to be known as "The California Foresters." Just prior to the evening and dedicatory meeting, Professor Walter Mulford, head of the Division of Forestry of the University and father of the idea that created the "Circle," gave a dinner to the visiting graduates and the faculty at the Faculty Club. The guest of honor of the evening was Mr. C. R. Johnson, president of the Union Lumber Company and donor of the logs. The California Section of the Society of American Foresters attended in a body.

The Foresters' Circle is to be the meeting place of the Forestry Club, and fortunately the weather of Berkeley permits holding most of the meetings outdoors. The meetings already held there indicate that it will be an important factor in developing a community of interest



THE "FORESTERS' CIRCLE"—AN OPEN-AIR MEETING PLACE COMPRISED OF EIGHT HUGE REDWOOD LOGS, BUILT AND SHAPED FOR SEATS, IN A TWENTY-SIX-FOOT CIRCLE, BY THE MEMBERS OF THE FORESTRY CLUB

and fellowship among forestry students and faculty, pride in the profession of forestry, and a feeling of responsibility to and desire to serve the nation in its efforts to solve its forestry problems. It is fortunate that the club meetings can be held amid sylvan surroundings, for it helps to intensify the love of the forest, begun in large part at the summer forestry camp in the Sierras, at which each student must spend three months as part of his course of study.

That the purpose of the Foresters' Circle will be impressed upon new members of the club and upon the many visitors to the grove, the club placed a bronze tablet on one of the logs bearing the following inscription:

FORESTERS' CIRCLE

May the Ideals Fostered Around this Camp Fire Play a Worthy Part
in the Conservation of the Beauty and Usefulness of our Forests.
GIFT OF THE UNION LUMBER COMPANY

It is thus made evident to the layman that the club members not only hold a sentimental love for the forest, but also recognize its usefulness to man and the need of so guarding it as to make this usefulness permanent.

Forest Conservation in Jugoslavia

Intelligent conservation of forestry resources worth several billion dollars is being followed by the Government of Jugoslavia, according to American observers who have spent considerable time surveying the vast natural resources of the country. This forest conservation is a part of a program for a larger use of these sources of revenue and to prevent the denuding of the timberland.—*Patrolman's Forest News*.

Wood Lasts for Centuries in Pharoah's Tomb

The relics taken from the tomb of King "Tut" conclusively show the time-resisting qualities of wood, for it is said that with the exception of the gold throne, the alabaster vases and funeral wreaths, every object found in the outer chamber of the tomb was made of wood or had a wooden foundation. While no definite information as to the kinds of wood has been received as yet, it is known that some of the objects were made of ebony. So, for an eon of time, embracing thirty-five centuries, these wooden objects have withstood decay and the gnawing teeth of time. Once again the trees bear witness—this time to the art and science of a long-gone people, who chose wood as the medium for the expression of their most sacred sentiments.

Senate Committee to Hold Hearings in Lake States

The special Senate investigative committee, which has been holding hearings in Washington and in the South for the past several weeks on a national forest policy, has announced a program of continued hearings in the Middle West for May, as follows: Bay City, Mich., May 8; Grand Rapids, May 9; Chicago, May 10; Madison, Wisconsin, May 11; and Duluth and Cloquet, Minnesota, May 12. Quite probably the committee will visit the Pacific coast during the summer also, as San Francisco, Portland, Seattle, and Spokane are slated for hearings; if the proposed program is carried out.

May Dusk

Twilight—and May—and the gleam
Of a red star through the trees—
And out from the night an old, old dream
And a vanished voice on the breeze.
And phantom steps that pass
In an echo, soft and low,
Where a shadow streaks the whispering grass
From out the long ago.

Twilight—and May—and the night
In its traveler's cloak drifts by;
And the fields are faint with the light
Of star dust blown from the sky;
And out from the dim abode
Where only the night birds call,
A shadow drifts by the road
Where the wild plum guards the wall.

Does the blood of the red rose stir
In the veins of the sleeper still?
The rose that has guarded her
At rest by the silent hill?
And now, as the darkness nears,
Where the spectral shadows spin,
Did ghosts step out of the years
As guests from a wayside inn?

Or voices that once thrilled,
Return with an old delight?
Voices, perhaps, long stilled
In the depths of an endless night?
Or is it the winds at play
Where the whispering maples call?
Or is it the twilight—and May—
And the wild plum by the wall?

—GRANTLAND RICE in *Washington Herald*.

Pack Trails Into Back Country

BY ARTHUR HAWTHORNE CARHART

HAS it been your privilege to ride the timber-line trail? Have you made camp under shadowing spruces, by streams newly born of snowbanks? Have you beheld the sun-touched clouds of the evening from some mountain-top camp, watched the shadows in the canyons below blot out rock and tree, and later sat until bedtime by a friendly camp-fire, doubly welcome at timber-line, where autumn chill is perpetual?

If you have traveled into the country where pack travel is necessary you have memories beyond value. If not, you have missed some of the joys of a most intimate touch with the outdoors and have a great adventure to look forward to and plan for.

Going into back country is not so difficult. Even the softest tenderfoot can take a pack trip in comfort. A lot depends on the attitude of mind attained before the trip is started. You must be prepared for real camp life, to enjoy little hardships and discomforts by treating them as part of the fun. When you can take things as they come and not grouch, then you are ready for your real pack trip.

A pack trip should not be a race against time. The full joy of a trip in the beyond-country lies in your ability to loaf along the trail. If you make ten miles a day, you camp at camping time. If it is fifteen or twenty, camp is with you and you lodge where you will. Do not try to make time on a pack trip. It is a most disappointing trip if you do. More pack-trip vacations are ruined through not observing this rule than from all other causes combined.

Come, may I not introduce you to some delightful trips to the country beyond the auto highway? The introduction may pave the way to your full acquaintance. It may open the door to a joyous vacation time spent in the heart of the hills.

The Solitude Trail

Do names hold any meaning? Often they do. The Solitude Trail, in the Bighorn Mountains, within the Bighorn National Forest, assuredly is no broad, crowded highway. Its name is well chosen.

Perhaps no other one trail in existence offers just the

type of majestic beauty found on the Solitude. Fifty miles of travel around its circumference presents vista after vista in massive, impressive mountain scenery.

Cloud Peak, gouged and worn by the glaciers that rest on its crest, is the hub around which the Solitude swings.

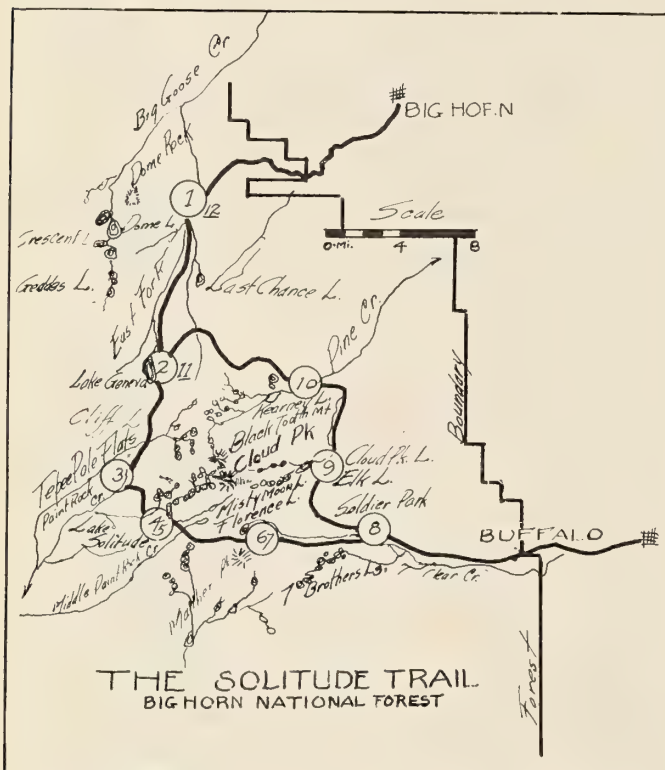


A PACK-TRAIN PARTY ON THE TRAIL—THE ONLY WAY TO REALLY SATISFY YOUR HUNGER FOR THE OUTDOORS. YIELD TO THE INVITATION OF THAT VAST COUNTRY TO WANDER AND BATHE YOUR SOUL IN ITS VARIED BEAUTY FOR A WHILE

A trip to the top of this peak is possible from the Lake Solitude side. It is a peak rarely scaled and presents a magnificent challenge to the mountaineer.

The fifty-mile circle trip on the Solitude Trail is approached from Sheridan, Tensleep, or Buffalo, Wyoming. From Buffalo one may travel by auto to Hunter Creek Ranger Station or Paradise Ranch. Beyond are trails. Up Clear Creek Canyon, one travels near the Seven Brothers Lakes, under the towering cliffs that shoot skyward, and to the beautiful Lake Ellenore, that lies almost at the highest point of the trail.

Seven Brothers Lakes deserve more than mere mention. These seven lakes lie in a series. Years ago



August Hettinger, pioneer forest ranger, packed fish to these lakes. The last, hard mile, where no horse trail existed, he carried the fish-cans on his back. In one lake he planted rainbow trout, in another grayling; Eastern brook trout were planted in a third; Loch Laven were placed in a fourth, natives in a fifth, and the two remaining received a pure plant of fry. Today one single variety of fish is found in each lake. The angler knows what the catch will be, depending on which lake he visits.

Over the top from Clear Creek Canyon is Misty Moon Lake. From there the trail swings on down to Solitude Lake, around the west side of the Peak and back again by Lake Geneva and Big Goose Creek to Soldier Park and Clear Creek. The trip demands at least a week. If you plan to take this trip, write the Forest Service at Sheridan, Wyoming, for complete information.

If you seek a trip into the mountain lands, where rugged-topped mountains lift their crowns above forests, lakes, and canyons of unexcelled beauty, hunt not a step beyond the Solitude Trail. It will satisfy your hunger for a real trip in the outdoors.

The Continental Divide Trail

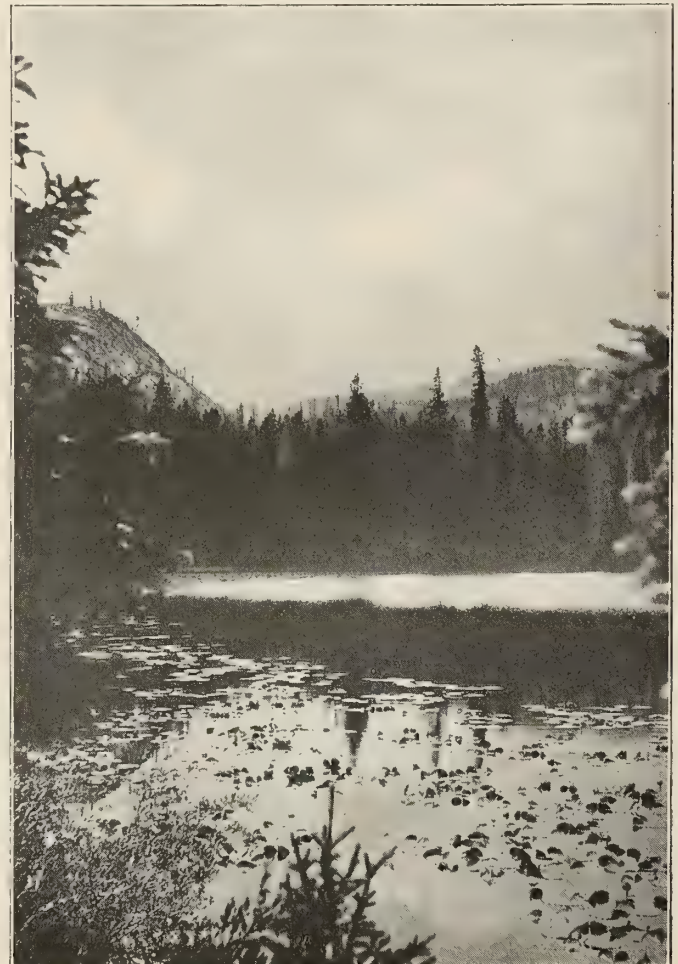
A zigzag trip on the continent's backbone may appeal to you. The Continental Divide trail, in southern Colorado, offers this sort of a trip.

It is a trail of high overlooks, where America stretches away on either side. One moment you are on the headwaters of streams which rush to the Pacific; the next you cross a little saddle and look into the upper basins of the Rio Grande, from which it starts the trip to the Gulf.

Like the Solitude Trail, travel here is solely by horse. Pack animals must carry your food, bed, equipment, and shelter. You camp at nights high on the massive uplift that defines the boundary between lands tributary to the eastern ocean and those of the western seas.

Antonito, Colorado, is the rail station where one happily hops out from the little coaches of the narrow-gauge railway. It is well to know that a first-class Pullman leaves Denver every night for Alamosa, where broad gauge and narrow gauge meet. The trip is so brief from Alamosa to Antonito that the novelty of the narrow gauge, with its little important, puffy engines and toy-like cars, has barely worn off before you must leave them.

A good road from here reaches into Conejos Canyon, where are places to outfit. From this canyon, with its pictured rock walls, the way is on horse trail.



A BEAUTY SPOT NEAR THE SOLITUDE TRAIL. PICTURE AFTER PICTURE, OF WHICH NATURE IS THE ARTIST, MAY BE GLIMPSED FROM THIS SCENIC TRAIL

Up the canyon the way leads, by the mouth of the beautiful South Fork, on to the lakes at the head of the Lake Fork of the Conejos. Platoro, an old mining camp, a ghost town of the Old West, is but a few miles along the trail, which then swings around Conejos Peak and southward to Blue Lake and the Continental Divide.



LAKE SOLITUDE, AT THE END OF THE SOLITUDE TRAIL, A NOTED FISHING WATER SURROUNDED BY COUNTRY OF UNEXCELLED BEAUTY

and the crags and canyons westward swing into view.

Up through the Alpine barrens, over snowfields years old, through the elfin-wood forests of timberline, and around the heads of great canyons, the trail winds. There are scores of lakes on the route. Among the most beautiful are the Dipping

On south the trail runs, first on the Atlantic side of the great watershed, then on the Pacific slope. Blue Lake is left with reluctance; but a reward soon comes when the magnificent outlooks to the mountains eastward

ping Lakes, that lie in a high mountain valley where spruce grows luxuriantly.

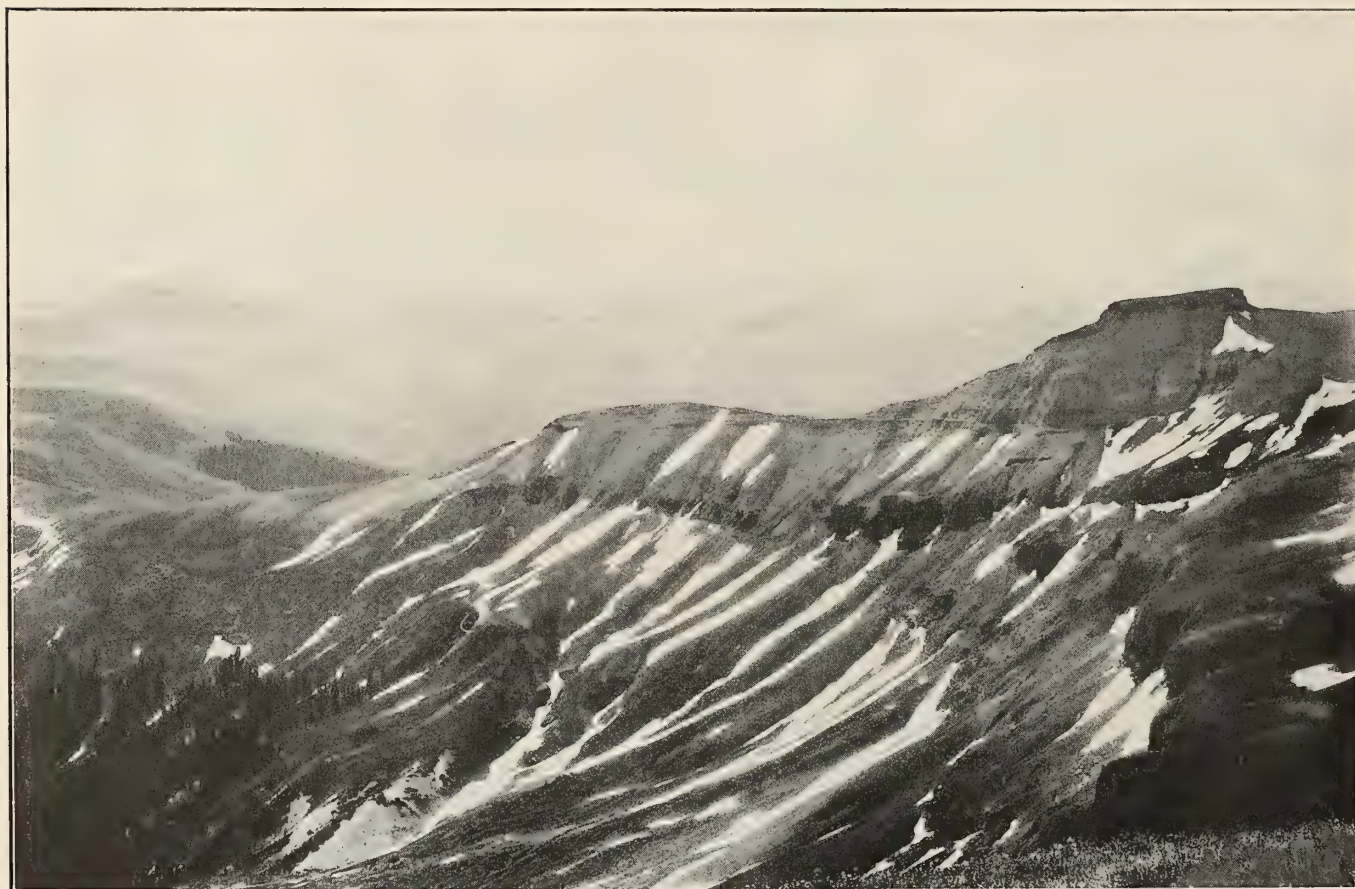
Finally, climbing out of the high cradle of the Dipping Lakes, the trail reaches the end of a spur ridge, where



THE UNIQUE CHAIN OF LAKES KNOWN AS "SEVEN BROTHERS." THEY ARE THE DELIGHT OF THE ANGLER IN THIS COUNTRY, FOR MANY YEARS AGO A FOREST RANGER STOCKED THEM, AND IN SO DOING PUT ONLY A SINGLE VARIETY IN EACH LAKE, SO THAT THE ENTHUSIASTIC FISHERMAN KNOWS JUST WHERE TO GO FOR WHAT HE WANTS



FROM CONEJOS CANYON, WITH ITS PICTURED ROCK WALLS, THE WAY IS ON HORSE TRAIL. UP THE CANYON THE TRAIL LEADS, BY THE MOUTH OF THE BEAUTIFUL SOUTH FORK, ON TO THE HEAD OF THE LAKE FORK OF THE CONEJOS



THE TRAIL REACHES THE END OF A SPUR RIDGE, WHERE THE OUTLOOK TAKES IN WHAT ONE FEELS MUST BE A LARGE PART OF NEW MEXICO. TRULY, ONE FEELS HE IS AT THE TOP OF THINGS WHEN HE TRAVELS THIS HIGH LINE ON THE ROOF OF THE CONTINENT. THE RETURN TRIP TO THE BEAUTIFUL, BROAD CANYON OF THE CONEJOS TAKES HALF A DAY AND LIES OVER THE SPRUCE-BORDERED LA MANGA PASS TRAIL

one travels this high line on the roof of the continent.

To Saganaga

Packing into back country with horses can be found anywhere in the West. But there is only one place in the country where one can pack into wilderness by canoe and be in or near public property all of the time. That is in the Superior National Forest of Minnesota.

In the West we have about a hundred and seventy million acres of mountain territory in National parks, forests, and monuments. In nearly every reservation



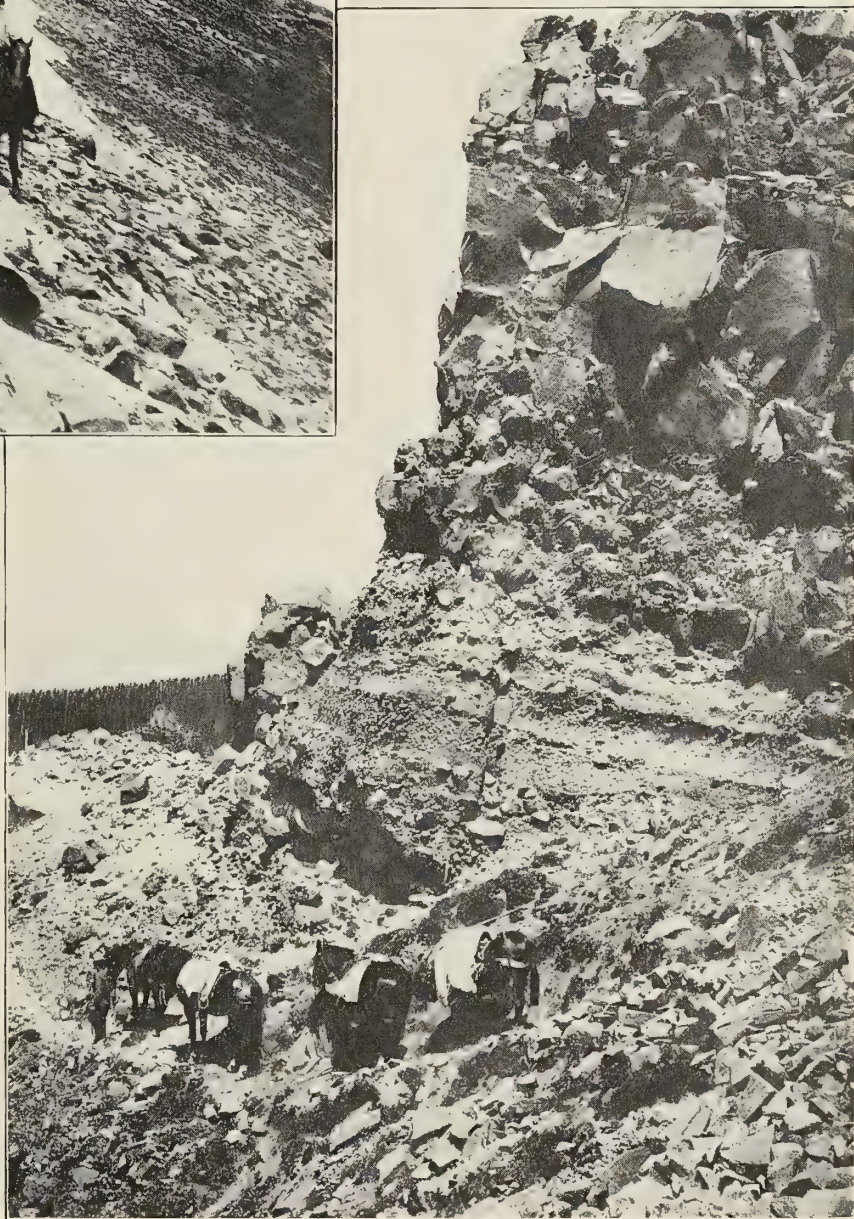
THE PARTY IS HALTED BY SNOW ON THE CONTINENTAL DIVIDE

the outlook takes in what one feels must be a major portion of New Mexico, and then drops quickly to Cumbres Pass. The return trip to the beautiful, broad canyon of the Conejos is a half-day ride from Cumbres over the spruce-bordered La Manga Pass Trail.

If a trip along the only trail of its kind in the West, where one never is quite sure if he is on the eastern or western slope, seems inviting to you, write the Forest Supervisor at Monte Vista, Colorado, and ask of the Continental Divide Trail. He can give you detailed data, cite outfitting places, and tell of local conditions on the trail. Generally, it is not open before July 1st. The trip outlined takes a week to ten days.

"Sittin' on the World!" said our guide when our party traveled the trail from Blue Lake.

No more expressive short description of this trail may be found. There is a feeling of being at the top of things when



THROUGH THE ELFIN WOOD FORESTS OF TIMBER-LINE AND AROUND THE HEADS OF GREAT CANYONS THE TRAIL WINDS, UNTIL ONE IS NEVER QUITE SURE IF HE IS ON THE EASTERN OR WESTERN SLOPE OF THIS HIGH MOUNTAIN LAND

there is some section where a trip on horseback can be made. We have only a little more than one million acres of lakeland wilderness, and this is practically all in the Superior Forest. It is one of the most unique and delightful areas we own, and no one is more important in all our national recreation system.

An ideal trip into this section is from Ely, Minnesota, to Saganaga Lake and return. Every trip in the Superior Forest is by canoe. There are no horse trails or auto roads. A trip by canoe is somewhat more economical than by horse and pack outfit. Furthermore, it is a type

reach Saganaga in a few days or take two weeks to make the trip. The most direct route is from Ely to Winton, Minnesota, by truck; thence by canoe or motor-boat through Fall Lake and a smaller lake to Basswood. Basswood is a lovely lake, nearly thirty miles in length. Bays and lesser divisions of the lake cut back miles into the shore, so this lake must have literally hundreds of miles of shoreline.

But we should not stop at Basswood, however, inviting it is. Saganaga is the goal.

Upper Basswood Falls boom down into a great bay at



EVENING ON SAGANAGA! THIS ALMOST-UNHEARD-OF LAKE IS ENCHANTING. NO DESCRIPTION IS ADEQUATE. IN THEIR POETICAL WAY, THE INDIANS LONG AGO CHRISTENED IT SAGANAGA—"THE-LAKE-WHERE-THE-ISLANDS-MERGE-AND-BLEND," FOR THERE ARE COUNTLESS ISLANDS IN THIS BEAUTIFUL BODY OF WATER, EACH A GEM IN ITSELF

of travel in which the vacationist must take a very active part.

Saganaga! This almost-unheard-of lake is enchanting. No description is adequate. The Indians christened it. Like all Indian names, it is fully descriptive. Saganaga means "The-Lake-Where-the-Islands-Merge-and-Blend." There are countless islands in this beautiful body of water, each a gem. Often the only land in sight is all on islands.

The Superior National Forest is laced through and through with waterways. One is bewildered with innumerable canoe trips when he reaches Ely, the end of rail and highway. The waterways radiate in every direction. But if one is in doubt, take the trip to Saganaga. There is no better.

There are several ways of getting there. One may

the International inlet to Basswood. The gamiest of fresh-water fish can be caught in these waters. The portage to the smooth waters above the falls is on the Canadian side. From here the way is through a series of lakes to Knife, or Mo-ko-man, Lake. On the map it looks like a knife partly open. Mo-ko-man in the Indian tongue means knife.

Just a few miles before Saganaga is reached by this route one passes through the lake white men call Cypress. But the Indian calls it the lake "Where-the-Otter-Left-His-Track." It is gorgeous. No other brief description is adequate. The waters are of peculiar clearness and tint. The cliffs drop from the sky to black shadowy depths of the waters. How far these sheer rock walls dive beneath the surface is not known. The waters at their foot are very deep, and if one knows just where to look, there

is a form in the rock walls which has all the appearance of being the petrified impression of a gigantic otter foot. There are several of these "tracks" on the cliff walls, and from these the Indians named the lake.

Four long days or an easy week will take the canoeist to Saganaga. To the northward, as one enters this majestic lake of beauty, is Cache Bay. The major outlet of the lake is here, and this waterway forms the northern boundary of the famous Hunters' Island. One may turn here and swing into the Quetico Forest of Canada and return to Ely one of several ways. It is a favorite route. Two weeks should be the very least allotted to this trip. Three weeks is a much better time.

Another route back lies through Alpine or Sea Gull Lakes to the southward; thence to Ca-be-miche-ga-me and O-gish-ge-muncie, to Little Saganaga, the Kawishiwi River, Insula, Alice and Hudson Lakes and Lakes 1, 2, 3, and 4.

No place in America is more interesting to the lover of the outdoors than this land, where travel is by canoe. Little islands topped with stately Norway pine are mirrored in level lake surfaces. Shy deer peek at you from the thickets at the edge of the stream or on lake shore.

The alluring lakes that lie on the way to Saganaga and return offer one of the most delightful highways to wilderness country that one may find the world over. Are these introductions attractive? Would you like to travel these trails—to swing around Cloud Peak, on the Solitude; to travel the ridgepole of the Continent; to live for a fortnight in the land of the Ojibway, on the water trails to Saganaga?

Come! Why not? They are far more interesting than any written introduction could ever be—these trails into the Country Beyond.



IN CANOELAND. NO COUNTRY IN THE WORLD SURPASSES THE SUPERIOR NATIONAL FOREST AS A CANOE LAND. THE OPPORTUNITY FOR THIS TYPE OF RECREATION IN THIS BEAUTIFUL FOREST MAKES IT ONE OF THE MOST ALLURING OF ALL OF OUR NATIONAL FOREST PLAYGROUNDS

The Story of the Bobolink

BY FANNY S. SIMMONS



From the south he came in the month of May—a stunning fellow in his brand-new wedding suit. Joyous and buoyant he was—just a reflection of the beautiful day that greeted him on his arrival.

The nice part of it all was that he was not only happy, but he wanted every one around him to know his happiness. His joy really seemed infectious—faces brightened as he sang; saddened hearts seemed to feel the sunshine of his presence, and the world was a happier, better place because of him.

“Only a bobolink”! Well what of that? He certainly brought the summer with him, and no music was ever so joyous and glad as was his.

How unusual his clothing! Nature reverses things with the bobolink. Seen from below, one would think him only a little blackbird; but when he lights on a clover’s top, one can see the pretty black-and-white mixed top-coat and smile at the yellow cap that he wears so carelessly on the back of his head.

He comes with many other bobolinks. Sometimes two or three hundred of them come flying up north together, singing as they come. I remember seeing fifty or more in a tree one lovely day in early May, and I not only saw, but heard, such a chorus of song that never can I forget its marvelous beauty.

Think of bringing from far-away South America such an orchestra! Up they come through Florida, where they are called the May birds. The male birds, like the men in pioneer times, come ahead and blaze the trail. The “women folks” fly along later, and how they find the particular birds that belong to them has ever been a mystery. They find them, however, and to housekeeping they go in the clover meadows; and if you can find their nests, you can do better than most people can. It is a pretty nest, hidden away where the fragrant blossoms and June daisies bend above it.

The wife has no black-and-white wedding dress. She is garbed always in brown, and when the babies come they, too, are clothed in the same brown dress as is the mother.

They have a busy, happy time up in this northern country. After the 4th of July, however, the rollicking song of the father is hushed and one seldom hears any note of joy from his throat. Just the metallic tink! tink! is heard.

About this time he throws off his lovely wedding clothes, and after moulting appears in the sparrow-like brown colors of his family.

Harvest time comes—early harvest time—and the bobolink family gets ready to go south again. Together they fly to the wild rice fields, where they eat their fill, and then on to the cultivated rice fields of South Carolina and Georgia, where they again expect to eat their fill. But disaster often overtakes them here, and they are killed in numbers and served as “reed-birds, four on a skewer, fifty cents,” to people who never could have known them and heard their rollicking northern song, else they could never have eaten a mouthful of the reed-bird.

The survivors go on and on, across to Cuba, where they are called Chambergoes—on through Central America to South America, where they rest for the winter and await the springtime.

When you hear people talk about the vanity of woman, her love of clothes and change of dress, remember to suggest to the maligner the fact that the *males* of some families are the ones to deserve this criticism.

Mrs. Bobolink wears ever the same quiet brown suit, but Mr. Bobolink just has to have a change, and every spring sees him getting a new stunning suit for his wedding trip, while poor Mrs. Bobolink comes along almost unnoticed in another dress, just exactly like the one she wore the year before, and *no yellow bonnet*.

America's Transition from Old Forests to New

BY E. T. ALLEN

IV. THE FUTURE

WHEN in any country reckless forest exploitation passes its zenith and the light lies on the other slope, or, better, reversing the image, when the wood-users begin to find it pays to climb out of the shadow into which following the easiest declivity has led them, the upward trend is no less certain than was the downward one. It is propelled by economic forces which, now that they are recognizable in the United States, will as always, if comprehended and not thwarted, gather strength and momentum. If we are to assist them, a forecast of the future is no less valuable than a history of the past or a survey of the present. And it must reckon with the use of forests as well as with their growth.

It pays to grow trees when those already grown are not too cheap; it pays to use trees economically when such material as may be saved cannot be had cheaper otherwise. In smaller countries than ours, there is not such distinction between these statements. They are affected by our long distances. It might seem that both forest growing and closer use would have begun first and simultaneously in the older regions near the Atlantic seaboard. Closer use did, because of transportation charges on material from a distance and of a dense population able to use a large quantity of low-grade material that does not bear these charges. Reforestation did not keep pace, however, except for pulpwood, to supply expensive plants not easily moved, because it was



(Cress-Dale Photo Company, Seattle)

ONE OF OUR NEW FORESTS—WESTERN WHITE PINE IN IDAHO, WHICH HAS FOLLOWED LUMBERING AND ESCAPED FIRE, AND WHICH GRAPHICALLY SUGGESTS THAT THROUGH THE MERGING OF PUBLIC AND PRIVATE EFFORTS THE GROWTH OF THE FUTURE MAY REBUILD THE GLORY OF A FOREST PEOPLE

cheaper to reach westward for the needed balance of high-grade lumber.

In the west, low-grade material cannot readily be marketed. The local population cannot use it and it cannot stand transportation cost. On the other hand, reforestation is simpler and has an appeal to a stationary industry, unable to migrate again that it has not had to the vanishing or migrating type. Hence it is already well begun. It is reasonable to assume that reforestation interest will move eastward as the east and south better realize the advantage of a home-grown supply that need not bear the transportation cost, which is al-

ready half or more of the price paid for western lumber. Also, that closer utilization in the west, now anxiously

sought by the lumbermen as carrying cost increases the investment in their trees, will be pushed as far and fast as growing market for low-grade material permits. Willful waste, which once skimmed the cream because new fields lay ahead, no longer exists anywhere. Nor is there any region of virtually free timber, to send its products to market at a price which cannot be met consistently with economy and sound business. Hereafter both lumbermen and the public must make the most of what is available.

Once this situation arrived to mark a turn in our national conduct, its necessities inspired a progress which will be increasingly apparent. The same American inventiveness and driving power which signalized our destructive exploitation processes should develop equal ingenuity in the opposite direction. Closer manufacturing, the saving of by-products, and the invention of new forms of wood utilization will reach high refinement and also be adapted to the changing character of a forest becoming less a mine of virgin timber and more a crop of younger growth.

THE DRIVING POWER OF NECESSITY

Big old trees containing much clear, knotless lumber will be needed for special purposes. Profitable forestry cannot duplicate these, for it takes hundreds of years. So not only will their contribution to less exacting uses be confined to the poorer material they also contain, but new wood products will utilize inferior species and quickly grown young trees. We already use wood fiber in construction commodities of the wall-board type, as well as in phonograph records, fiber-silk wearing apparel, and other disguised forms. Future forests may go largely into fiber compositions that do not require old trees. We have found not only that no material equals wood in strength for airplane propellers, but also that it is strongest when many small strips are laminated and glued, to distribute the stresses more safely than can a single piece. It is but another step to supplant the big construction timber from a single tree by a perhaps better laminated timber built up of many smaller ones.

Industrial research has already developed many such economies, waiting for our adoption. Some of them do not pay yet, while lumber is sufficiently available. Some lag because manufacturers hesitate. Others are retarded because, although the lumberman wants to use all his material, conservative consumers persist in demanding the familiar products that were standardized by wasteful use when waste was economy. For years attempt has been made to sell "odd-length" lumber; but the public still insists on having it run 12 feet, 14 feet, 16 feet, and so on. If a defect in a tree restricts a log



(Cress-Dale Photo Company, Seattle)

TYPES OF VIRGIN DOUGLAS FIR AND WESTERN RED CEDAR—BIG OLD TREES CONTAINING LENGTHS OF CLEAR, KNOTLESS LUMBER, WHICH CANNOT BE PROFITABLY REPRODUCED BECAUSE IT TAKES HUNDREDS OF YEARS TO GROW THEM

to 13 feet, the manufacturer must cut off another foot—an 8 per cent waste.

Countless secondary wood-working establishments now remanufacture either lumber or the waste therefrom. Furniture, vehicles, implements, household utensils, and toys suggest an interminable list. These establishments are being left behind by the migration of lumbering. Transportation cost on their raw material is becoming serious. They will regroup near the permanent supplies, sometimes merging with lumber manufacture, thus effecting economy in both, closer utilization of the forest, and conspicuous encouragement of forest-growing. Similar will be the result of a barely glimpsed but certain tremendous utilization of lumbering by-products other than waste pieces and wood fiber—alcohols, oils, turpentine, lyes, creosotes, acids, and other chemicals and essential substances. A chemist's list of what can be made of wood, when it is commercially profitable, seems to a layman to contain almost everything but metal.

THE SPARK OF A PROGRESSIVE SPIRIT

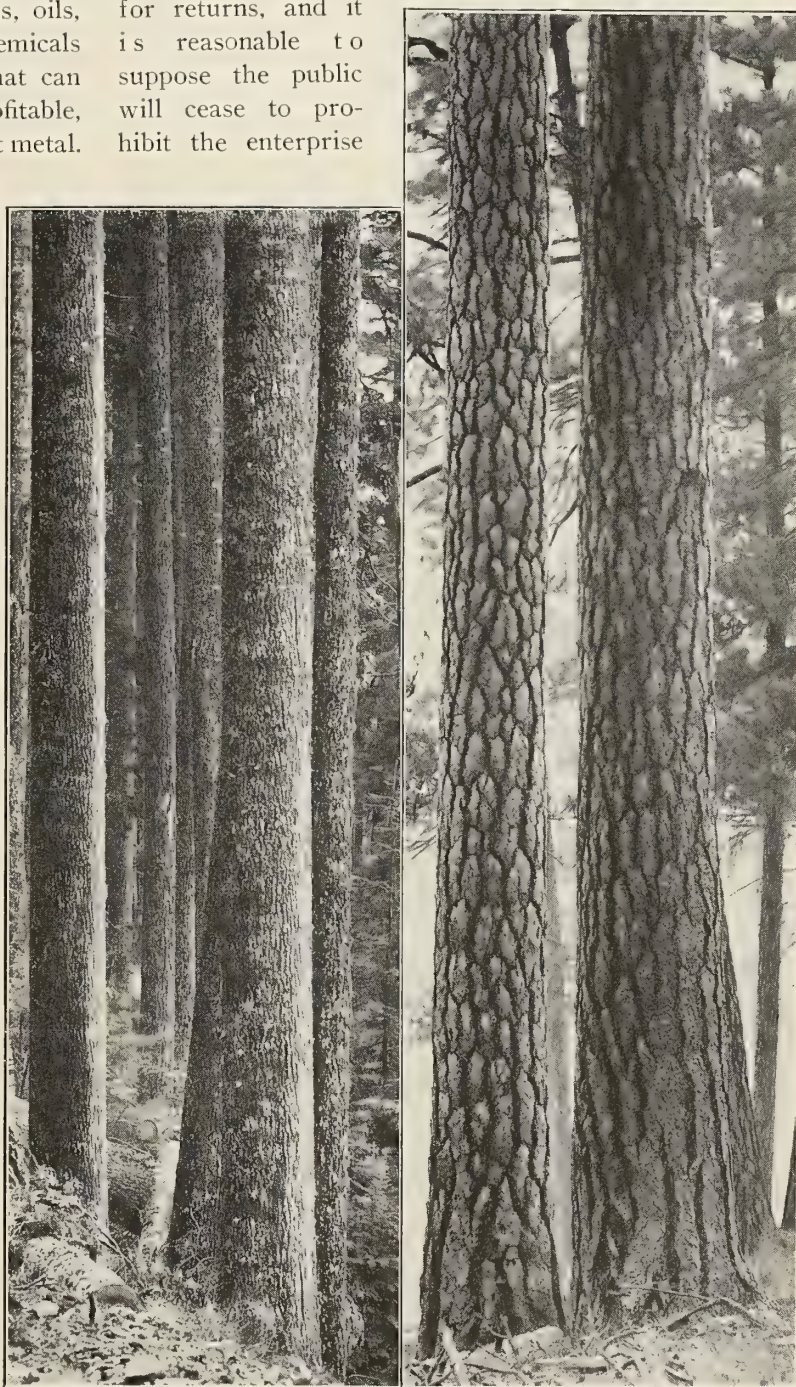
All these influences are gathering force in the industry which controls over half our privately owned forests and which we broadly term lumbering, although it also includes paper-making and other wood manufactures owning their own timber tracts. It has again two significant divisions—those which are near the close of their operations and have small interest in the future, and those which have long life ahead and are adjusting themselves to a new order. Of the former, there is not much to hope, except as they are forcibly influenced by progress during their temporary survival. The latter class, however, is awakening, although even yet far from realizing how rapidly a progressive spirit must fire it from within, now that the spark is kindled. It is still inclined to be pessimistic when the obstacles are considered, but nevertheless knows in its heart that survival requires making the most of the remaining forests and perpetuating their productiveness.

Industry cannot undertake the task alone, however. State and nation must carry much of the land; also create practicable forestry conditions for that retained in private ownership. Keeping our eyes ahead, so as meanwhile to build firmly the foundations upon which our final forest policy will rest, we must seek to visualize the industrial types of, say, 25 years hence and how they will use the land they keep; also the public's part of the whole project then.

Perhaps still unfinished, the process will then be well along of determining where and how much land we must keep in forest; also its ownership and responsibility division. As in other crop-growing, the main production will be

sought in the most favorable regions. Forest growth is most rapid in the South and near the Atlantic and Pacific coasts. The drier, colder inland regions will be called on in the measure that these districts prove inadequate.

Private enterprise will retain considerable virgin timber still uncut, an unexpectedly large area of valuable second growth on lands now restocking, and some freshly cut land which by reason of quick productivity and accessibility promises to be profitable permanently under private forestry management. This also will be more extensive than the industry now hopes, for with better fire prevention forest reproduction will be simplified and cheapened, while the developed use of immature material will shorten the wait for returns, and it is reasonable to suppose the public will cease to prohibit the enterprise



(Cress-Dale Photo Company, Seattle)

WESTERN HEMLOCK AND WESTERN PINE, TYPICAL INDIVIDUALS OF THE GREAT FORESTS OF THE PACIFIC COAST REGION, WHERE LIE OUR LAST IMPORTANT STANDS OF VIRGIN TIMBER

by confiscatory taxation. To the extent these factors permit, private forestry will be found taking permanent care of favorable areas, especially where tributary to



SUCH REPRODUCTION, TWENTY-FIVE YEARS AFTER LOGGING, IS VISIBLE PROOF THAT STRONG FAITH IN THE POWER OF OUR FORESTS TO "COME BACK" IS JUSTIFIED. THE EVENTUAL ADJUSTMENT AND INCREASED ACQUISITION OF OUR PUBLICLY OWNED FORESTS WILL GO FAR TO ASSURE THE PERPETUATION OF OUR VIRGIN TYPES

permanent operations, amounting to a large aggregate, although still insufficient for the public welfare.

A PARTIAL GUIDE TO PUBLIC OWNERSHIP

Of the balance taken over by the states and the nation some will be good enough to be highly profitable, some less so, although the public can command cheaper

money for the enterprise, and another proportion will be held publicly because it must be done. State, and perhaps municipal, acquisition will increase, both because it pays directly and to assure continuity of local industry and water-flow; national acquisition will be both for profit and to afford the consumer at large the protection other agencies cannot afford to give him. It is also always necessary for the public to hold certain special-use forests, as to preserve virgin types like the redwood for their interest, or to produce clear grades of slow-growing hardwoods which take too long to reimburse private investment. Looking to older countries for a partial guide, we find that for all these reasons 71 per cent of Switzerland's forests are in public ownership, 53 per cent in Germany, 48 per cent in Rumania, 39 per cent in old Austria, and 35 per cent in France.

This adjustment of final ownership will vary in our states with their advantages for forest-growing. While it remains in process, the cost of keeping all the land productive until it is complete will be distributed in some manner among all concerned, since all have to benefit thereby and since it will not be done otherwise. No single agency will assume a properly joint burden. Whether states and nation will co-operate directly to assure reforestation on unprofitable private lands they must assume eventually, or whether attempts will be made to require the work of the owner if he is still lumbering and to enable him to pass the cost on to the current consumer, is a question still unsettled. But it will be settled, or some other solution found, long before the eventual and permanent responsibility is fixed by economic developments.

THE LUMBER INDUSTRY OF THE FUTURE

Under whatever ownership the forests of tomorrow may be, there must be a vast lumber industry to make them useful and support their communities. This will be differentiated into two distinct types. Many of the large plants of today will follow others that have already disappeared as their virgin timber supply failed, and be supplanted by small and numerous portable mills that can handle scattered tracts of new growth profitably. Much of the lumber of the future will always be of this old-fashioned type, produced in this small and individual way. On the other hand, changed conditions will also lead often to operating units even larger than are common today; for where the supply is available, these will prove the most efficient and economical in producing the new and refined products of the future, in marketing and distributing at a distance, and in giving privately retained forest lands the proper management and protection. They will give stability and permanence to forest communities, their labor, farm products, and secondary wood-using industries, and also to the market for timber crops grown on state and national forests and on private lands other than their own, including farmers' woodlots.

When our final forest policy is established, mystery

and prejudice concerning forest industry will have disappeared, for we shall all be in the business ourselves, more or less; also forced, as we have not yet done, to study constructively and dispassionately the financial and economic conditions under which it can be permanently conducted. It will have the interest now accorded agriculture, with its needs and responsibilities equally comprehended. Neither agitators, public, nor lumbermen will then be permitted to consider forestry a class question, with public and private interests opposed; for we shall have realized that forest-growing, forest manufacture, and forest use are interdependent components of one vast productive activity of the nation—using its land, employing its people, supplying its wants—like agriculture in its demand for a co-operative prosperity, but unlike it in demanding, because of even lower returns and longer investment, public participation to assure adequate volume.

DOUBT NOT THE GENIUS AND SENTIMENT OF A FOREST PEOPLE

For the first time in our history, this concept is taking form in the leading minds of hitherto aloof and mutually suspicious elements, and they are drawing together to find that mutual understanding destroys many supposed obstacles, and to seek means of removing the others with mutual effort, time, and patience. To doubt success, with this resolve, is to doubt the theory of American institutions and the genius of a forest-born people still possessed of ample forest lands.

And although consideration must be largely and principally economic, for economic facts must be faced, he is an ill prophet who does not reckon with the sentiment of such a people. However practical they may be, there has not been obliterated a love of the forest for its own sake, which will demand, as well as wood and water, such preservation of esthetic and recreation values as shall perpetuate their best traditions and meet reviving needs of the spirit. Without this sentiment, neither forests nor peoples survive.

THE END.

"What has thus happened in northern China, what has happened in Central Asia, in Palestine, in North Africa, in parts of the Mediterranean countries of Europe, will surely happen in our country if we do not exercise that wise forethought which should be one of the chief marks of any people calling itself civilized. Nothing should be permitted to stand in the way of the preservation of the forests, and it is criminal to permit individuals to purchase a little gain for themselves through the destruction of the forests when this destruction is fatal to the well-being of the whole country in the future."—*Theodore Roosevelt.*

A Worn-out Field

I AM a worn-out field,
Buyers pass by in scorn;
No longer my pulses thrill
To the plowman's touch at morn.
Of no more use to man,
Now I may lie and rest,
Like a ragged blanket flung
'Gainst the craggy hillside's breast.

Is there not one to tell
Of the glory of days gone by,
When my proud branches seemed
Brushing the very sky?
Then was I sought by men,
Greedy were they to share
In my wondrous wealth, nor paused
Till they saw me stripped and bare.

Years did I lie out then,
Nursed by the sun and dew,
Till deep in my heart was born
The strength to struggle anew.
Blotting out death came life,
Creeping like living flame—
A clothing of soft green grass
And vines to cover my shame:

Deep did I drink from life,
Till my veins ran full and free;
A million flowers gave
Their lives to succor me.
Then came horses and men,
With plow and harrow and spade.
Loud was the crack of the whip,
Black was the wound they made.

Now it was not enough
To give them my humble store;
They sifted me through and through,
Greedily seeking more.
Giving me nothing back,
What could I do but die,
The cruel lips of lust
Sucking my life-blood dry.

Despised by bird and bee,
Bloomless my barren sod,
Shriveled and sere and old,
Pity me, patient God!
I am a worn-out field,
Tossed from the plow in scorn.
Years must I lie and wait
For the Resurrection morn.

—*Maud Morrison Huey.*

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PLEASANT THINGS WE HEAR

"To help along the good work, I wish to join the Association personally as well as officially, and I think I can get some of my friends to join also, so kindly send me half a dozen application blanks at your earliest convenience."—*William A. L. Bazeley.*

"The AMERICAN FORESTRY Magazine carries with it such a wonderful fund of information that I am going to have it bound in book form. It is a forest history of our country that I must preserve."—*Mrs. W. W. Stark.*

"Allow me to congratulate you upon the fine issue of AMERICAN FORESTRY for February. I think the article by Mr. E. T. Allen is particularly fine, and I look forward to reading his subsequent articles."—*Anson C. Goodyear.*

"I cannot afford to have AMERICAN FORESTRY, which we have always taken, absent from my reading table."—*Arabell White Hemingway.*

"Again congratulations. Your March issue is even more attractive than the two preceding ones. It is quite the best issue that AMERICAN FORESTRY ever had, both as to contents, cuts, and printing, and is a wonderful credit to you."—*P. S. Ridsdale.*

"Your February number is a beautifully printed and illustrated issue and is filled to the brim with interesting things."—*Robert Sparks Walker.*

"The January issue of AMERICAN FORESTRY has been received, and I wish to congratulate you upon getting out a number such as this. I think that the contents and get-up are the best that I have ever seen since becoming a member of the American Forestry Association, ten years ago."—*Karl E. Pfeiffer.*

"The magazine has been exceedingly interesting during the past year, and I wish you continued success in the valuable work you are doing."—*F. E. Schall.*

"As Dr. Coue says, every month, in every way, the AMERICAN FORESTRY magazine is getting better and better."—*Arthur De Zur.*

"I think AMERICAN FORESTRY is the best magazine of its kind published and can't get along without it."—*George E. Wagner.*

"Every day, in every way, your magazine is getting better and better."—*Charles F. Young.*

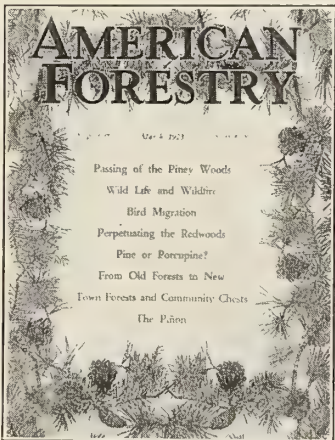
"I think the January issue of AMERICAN FORESTRY is one of the best I ever read."—*Arthur De Zur.*

"I am much pleased with the magazine and pass it on to some children at a Community House in Philadelphia when I am through with it."—*Henry B. Abbott.*

"Reading our magazine every month makes my enjoyment of the Colorado forests much more complete."—*C. W. Doherty.*

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May, 1923

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GAME CENSUS

The game census of the National Forests in District 4 shows some interesting facts: All forests have deer on them, the Kaibab the most, the Caribou the fewest.

Elk are next most widely distributed, being found on twenty-one forests; most on the Teton, fewest on the Lemhi.

Mountain sheep are scarce, but widely distributed, being found on seventeen forests. The Teton leads in numbers, the Boise is the tail-ender.

With mountain goats it is different. They are found on only seven forests, and the Boise leads, with the Payette at the foot of the list.

Moose are found on five forests, the Teton having the most, the Salmon the fewest.

Antelope also are found on five forests, the Lemhi leading and the Minidoka bringing up the rear.

CALIFORNIANS CHECK VANDALISM

A "Hill and Mountain Club" has recently been organized in Tulare County, California, writes Ernest G. Dudley, for the purpose of aiding in the prevention of the ruthless destruction of wild flowers, loss by fire, pollution of streams, and the littering of picnic grounds and camp sites, and to make and keep beautiful the foothill and mountain roadsides. The members are required to take the following pledge:

"I pledge myself to leave the hills and mountains as beautiful as I find them; to observe and aid in the enforcement of all measures intended to preserve their natural features, and to respect private property and the rights of others."

Enthusiastic nature lovers thus register their protest against the needless destruction of natural beauty, and it is hoped that similar clubs may be widely organized.

THE NATIONAL CONFERENCE ON STATE PARKS

The program for a nation-wide system of state parks, similar to those now provided by the Federal Government and a few of the more progressive states, is expected to receive a very decided impetus as a result of the Third National Conference on State Parks, to be held early in May. Friends of conservation from every section of the country, representatives of park boards, and official delegates named by the governors of practically every state in the Union will gather in picturesque Turkey Run State Park, Indiana, on May 7, for a three-day convention.

Judge John Barton Payne, of Chicago and Washington, former Secretary of the Interior, and president for twelve years of the South Park Commissioners of Chicago, is serving his second term as Chairman of the National Conference on State Parks. He believes the establishment of new state parks will not only serve to strengthen the na-

tional policy of conservation, but will prove a boon to thousands of motorists.

"Each year the number of touring motorists has been increasing by thousands," Judge Payne explains. "With the steady increase in good state and national highways, and the increased number of automobiles sold, motor touring has become more and more popular. But most people, when starting out, want some objective. This can be



Judge John Barton Payne

furnished with more state parks. The nineteen national parks have proved an attraction to literally hundreds of thousands, but they are entirely inadequate to care for all the tourists."

The meeting at Turkey Run State Park next month will be the third of its kind since this organization was formed at Des Moines, Iowa, in 1921, by a group of public-spirited citizens interested in developing the idea of state parks. The initial gathering called by Judge Payne while he was Secretary of the Interior was largely of a missionary character. The second convention, held last May at Palisades Interstate Park, Bear Mountain, N. Y., was successful in interesting a number of states in starting state park projects, notably in Utah, Missouri, and Nebraska. It is believed that the forthcoming conference will prove even more successful.

It is expected that growing out of the Turkey Run convention there will be formed a more stable organization for all-year-round work in behalf of state parks. At present the National Conference is limited to an annual meeting. The contemplated plan is for an organization which can act as a clearing house for information on state parks, and which can be utilized by various states in fostering park plans.

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AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

YOUNG MAN, 21 years old, high school graduate, and at present employed as district school teacher, desires Forestry work with a lumber company or private estate for summer vacation and longer if work is satisfactory. The best of references. Box 4090, care AMERICAN FORESTRY, Washington, D. C. (2-4-23)

WANTED, to communicate with party interested in Forestry to act as financial partner in developing some large tract of cheap land, must have sufficient capital, would accept straight salary, large fruit or farm proposition considered. Have made this my life work and study, short course graduate, several years' experience, logging, road-making, pruning, manager 1,500 acre farm, orchard and forest combined. Address Box 4095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-23)

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PAPER FROM ALASKAN WOODS

Alaska can supply one-third of the paper needs of the United States, according to a recent Forest Service report, and our paper consumption is growing each year. Pulp timber on the Tongass National Forest amounting to 334,000,000 cubic feet is being advertised for sale.

Two large bodies, one of 260,000,000, the other 74,000,000 cubic feet, are involved. The smaller body is within a few miles of Cascade Creek, one of the best water-power streams in Alaska; the other is 40 miles distant, on Kupreanof and Kuiu Islands. Navigable and sheltered waterways furnish a cheap and easy way for towing the logs to Cascade Creek power site on Thomas Bay.

The lowest bids that can be considered are 60 cents per hundred cubic feet for Sitka spruce and 30 cents per hundred for hemlock and other species. Three-fourths of the pulpwood is western hemlock and one-fourth Sitka spruce. The final date for receipt of bids by the District Forester at Juneau, Alaska, is July 31, 1923. The bidder is assured that accepted prices will hold good until 1930, with possible adjustments every five years thereafter.

LIFE ON EVEREST'S HEIGHTS

Although the 1922 British Expedition to Mount Everest failed in its principal aim, which was to reach the top of the highest mountain in the world, it did succeed in finding out a number of things of much interest to scientific men. These things are now being made known in various scientific journals, says the *Science News-Letter*.

Certain brave little plants, such as edelweiss, were found blossoming at a height of nearly 20,000 feet. Wild animals and birds, such as mountain sheep, ravens, and rock doves, unacquainted with human beings, showed no fear of them at all, readily eating from the climbers' hands. These wild sheep, ravens, and doves, together with wolves, foxes, rabbits, rats, mice, and condors, with a few other birds, were found at an altitude as high as 20,000 feet and occasionally even a thousand or more feet higher. Condors were observed flying high above the mountain's north summit, 24,000 feet above sea-level, where the atmosphere was only one-third as dense as at sea-level.

Some naturalists have proposed the theory that life on the earth must have begun first on mountain summits, for these summits might be considered as the first parts of the earth to be cool enough for the existence of living things. Geologists point out, however, that many of our highest mountains were formed since those earlier geological epochs in the rocks of which plant and animal foods have been found.

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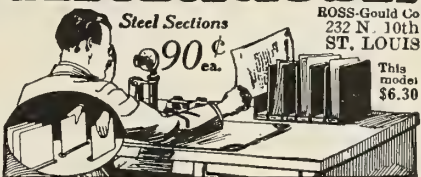
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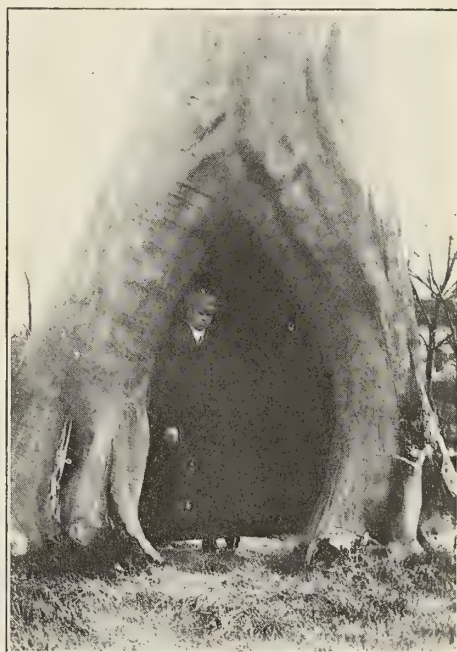
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HISTORIC BLACKHAWK TREE

Part of the giant cottonwood tree known as the "Blackhawk Tree" is on the grounds of a resident of Evanston, Illinois. The tree is an authentic relic of the early Indian period, and it is said that Chief Blackhawk and other Indians often held council within it. A man on horseback can easily enter the trunk and turn around in it.—W. F. Hild.

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We have purchased 122,000 pair U. S. Army Munson-last shoes, sizes 5½ to 12, which was the entire surplus stock of one of the largest U. S. Government shoe contractors.

This shoe is guaranteed one hundred per cent solid leather, color dark tan, bellows tongue, dirt and waterproof. The actual value of this shoe is \$6.00. Owing to this tremendous buy we can offer same to the public at \$2.95.

Send correct size. Pay postman on delivery or send money order. If shoes are not as represented we will cheerfully refund your money promptly upon request.

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LEADERSHIP

France so closely utilizes her forest trees that she obtains one-seventh of her lumber from trees that grow along canals, rivers, and between lots, according to a bulletin issued by the New York State College of Forestry at Syracuse University. The prodigality in the use of forest lands by Americans is astonishing to foreigners, especially in countries like Sweden, Germany, and France.

On waste land, areas where trees once grew, but on which nothing now grows, we lead the world by a disgracefully large margin. This area represents more territory than New York, Pennsylvania, New Jersey, Delaware, and Maryland. It represents an area larger than the combined forest lands of Germany, Belgium, Denmark, Holland, France, Switzerland, Spain, and Portugal.

We have another vast acreage of semi-devastated forest land that has been cut over and is producing only one-fourth of the forests it should grow. This region is almost as large as all the states on the Atlantic seaboard.

These vast tracts are being increased annually by three or four million acres. Much of this is taken from our virgin forests that will last no more than twenty-five years at the present rate of cutting. We lead all the nations of the world in forest fires (30,000 annually). We burned every twelve months during the five years ending 1920 approximately 9,000,000 acres, at an average estimated loss of \$85,000,000. Insects are damaging our forests, at a very conservative figure, to the extent of \$100,000,000 a year, and disease is destroying trees in great quantities. The per capita consumption of timber has been curtailed since 1906 more than one-third, due to scarcity of wood and high prices. We are growing only one-fourth of the volume taken from the forest and actually utilizing not more than 25 per cent of the average tree that is cut down.

Confronted with this serious situation regarding one of the nation's most valuable resources and the increasing devastated and semi-devastated forest lands, we are planting through state, federal, and private interests not more than 50,000 acres a year. We should be planting at least as much as we use and destroy.

APPROXIMATELY 166,000,000 acres of privately owned forest land are wholly unprotected from fire, says the Forest Service, United States Department of Agriculture. On many other areas the protection is incomplete and inadequate. Based on a six-year average, the annual loss of property from forest fires is \$16,424,000; yet a yearly expenditure of \$9,263,000 would fairly protect all of the privately owned timber lands in the United States.

WESTERN PINE MENACED

An area of 1,276,264 acres of yellow pine timber, or twice the size of Rhode Island, located in the heart of our last great stands of virgin timber, is threatened with destruction by a bark beetle, according to the United States Forest Service.

In this area located in southern Oregon and northern California the losses from 1910 to 1919 have aggregated 1,200,000,000 board feet, according to experts of the Bureau of Entomology, causing an average annual destruction of three hundred and sixty thousand dollars' worth of timber.

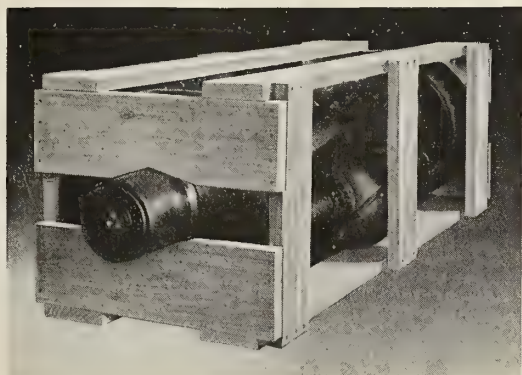
The insects were largely cleaned out on 200,000 acres last year, and the survey has shown that an area of about 722,000 acres still needs control measures applied.

The female beetle bores through the bark, laying her eggs inside, and the larvæ when hatched live on the sap-conducting layer, girdling it and shutting off the flow of sap, which soon kills the tree. The control measures consist in felling the tree and peeling off the infested bark, thus exposing the larvæ of the beetle to hot sunlight, which kills them.



BLENNERHASSET TREE

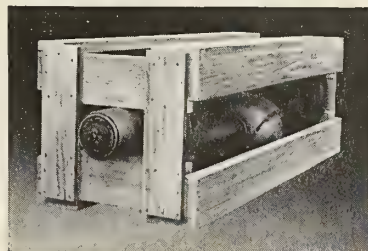
In connection with the Burr-Blennerhasset conspiracy, on what is now known as "Blennerhasset Island," near Parkersburg, West Virginia, it is said that when Blennerhasset was pursued by the militia he took refuge in a large sycamore or buttonwood tree, in which there was a large hole. This hole is now almost closed by growth. The tree is one of a number of objects of interest on Blennerhasset Island pointed out to visitors who have read of the well-known Burr-Blennerhasset conspiracy. It shows no signs of decay as yet, though the incident on which its historic claim is based took place about 1807.



The crate on the left is one of several crates designed for a manufacturer of automotive axles. It takes the place of the crate shown on the right.

The advantages of the new crate are: a marked saving in lumber; a considerable decrease in weight; more rigid construction; prevention of side play; better protection for the drum; lessened labor cost.

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BOOK REVIEWS



THE FORESTS OF NEW YORK STATE. By A. B. Recknagel. Macmillan, New York. \$2.50.

In this book the author's aim is to show what the forests of the Empire State have meant in the past development of the state and nation, and to give some idea of their present significance and their vast potentialities for the future. "Half of New York State is better suited to the growing of forests than to any other purpose, and while seventy years ago the state was pre-eminent in the lumber industry, she is today spending vast sums for imported timber."

The author deals entirely with the economic aspects of the subject—the character of the land and its forests, the lumber industry, the pulp and paper industry, the development of a state forest policy, forestry as a land problem and forestry as an industrial problem.

Although written for the general reader and chiefly for the people of New York State, it is replete with trustworthy and authoritative information not previously available in assembled form, and it will be invaluable for foresters and other professional men who are interested in state forests.

OUR VANISHING FORESTS. By Arthur Newton Pack. Macmillan, New York. \$2.00.

In this book, popularly handled for general consumption, Mr. Pack makes a strong plea for the encouragement of interest in wood as a crop, for more effective fire protection, for Federal leadership exercised through the extension of our National Forests and through the development of a market for wood now wasted during the process of lumbering and manufacture. He stresses the value of the farm woodlot and the municipal forest movements as keystones of the new attitude toward solving our forest shortage, and urges the need of public education and co-operation in order to guarantee a permanent wood supply. The book tells of the usefulness of the forest in supplying us with wood for a thousand necessities, from the making of toothpicks to great steamship piers, and tellingly treats of the ways in which wood, in the form of myriad forest products, enters the daily life of the nation.

Announcement is made by Blakiston's of the second American edition of Palladin's "Plant Physiology," which is just from the press. The new edition has a biographic note and chapter summaries by the editor, 173 illustrations, eight volumes, xxxiii+360 pages, and sells for \$4.00. It is based on the

German translation of the sixth Russian edition and on the seventh Russian edition and is edited by Burton Edward Livingston, Ph. D., Professor of Plant Physiology and Director of the Laboratory of Plant Physiology of Johns Hopkins University.

Two popularly written books have recently come from the press by Charles Lathrop Pack, president of the American Tree Association—"The School Book of Forestry" and "Trees as Good Citizens." The first, as the name implies, is handled with a view to educational use and will be of value to teachers and students interested in forests and forestry. It is replete with information, clearly and concisely put, which every man, woman, and child of these United States should have, regarding our original forests, their depletion both through use and abuse; the protection of our remaining forests, and what is needed to renew and perpetuate our source of wood supply. The second is the story of the shade tree in its every aspect, setting forth delightfully the rights of the various species to claim good citizenry. In telling about shade trees—their selection, planting, care, the treatment of diseases and injuries, and their intrinsic value—the author stresses the human and most appealing side of trees and makes a valuable, unique, and dignified contribution to the vast literature on the subject. The book is unusually well illustrated, carrying one hundred and twenty-four illustrations in black and white and sixteen full-page color illustrations of superlative beauty.

NEW WASHINGTON ROAD MAP

The Forest Service has issued what is conceded to be the most complete road and recreation area map of the State of Washington ever put out. A supply of these maps has been received by the District Forester's office in Portland, Oregon. The map shows in red all paved roads, all National Forest recreation areas, national parks, and the new state parks. It shows the location of all trunk highways and secondary roads as well as mileages. On the back of the map folder are listed the 59 municipal camp grounds of the state, as well as State and National Parks Association parks; also descriptions of all National Forest recreation grounds. The list of municipal camps contains complete data as to accommodations to be found at the different camps, which information will prove of great value to autoists.

The map is issued free and copies may be obtained from the District Forester, Portland, Oregon.



"PUT'S OAK TREE"

The stump of a tree shown in the picture is all that is left of the original oak to which Gen. Israel Putnam, commonly known as "Old Put," was tied when taken prisoner during the French and Indian war of 1756. He would have been burned there but for the intervention of a French officer, and, even as it was, he remained in bondage during the whole of an engagement, during which he might have been struck by the bullets of either friend or foe. It was, in fact, his foes who released him, taking him to Canada as a prisoner. This tree stood on the top of what is called Indian Ridge, at Crown Point, New York. It was blown down about twenty years ago, but the stump remains on the grounds of a private individual and is carefully guarded from possible vandalism.

ART BETTERS NATURE IN MOVIE-LAND

Cecil B. de Mille, the movie king, has made pictures fourteen times in the redwoods, and yet he says that the redwoods of California are photographed adequately for the first time in Jeanie Macpherson's "Adam's Rib," which has now been released by Paramount. And all because he did not go to the giant forests, but built his own right in the studio!

This forest is said to be one of the real marvels of recent cinema construction. It is 112 by 252 feet, the largest set ever built inside a studio. It covers over 26,000 square feet. It has a 200-foot running stream with a fall of 18 feet, a pool, a fallen tree, and a cave. There are 45 huge trees, twelve of which are over fifty feet in circumference. Twelve thousand ferns were needed and nearly six tons of Oregon moss. It is said to have taken 400 carpenters and plasterers 24 hours a day to make this forest. It cost thousands and thousands of dollars. And it will return thousands, believe the producers, for it permitted the placing of lights and

properties in a manner to produce eye-pleasing results where Nature is sometimes kind to the vision, but very, very hard on the more exacting camera lens.

De Mille himself is convinced that within ten years "going on location" will be almost a forgotten phrase.

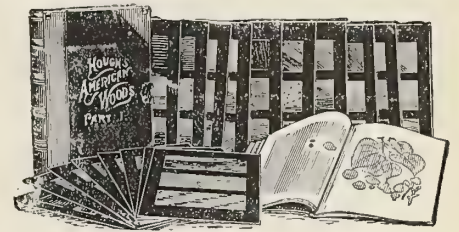
IT IS significant, says Col. William B. Greeley, Chief Forester, in the annual report of the Forest Service, that in the southeastern group of states, North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi, of which only North Carolina is organized for forest fire protection, the area of forest land burned in 1921 was 58 per cent of the total in the United States, and the damage to timber was 49 per cent of the total damage in the country.

NEW FOREST SCHOOL

Louisiana State University will be the first in the South to have a complete course in forestry. This course will be opened next September. The new course is an outgrowth of the summer forestry camps conducted by Major J. G. Lee, of the Department of Forestry and Horticulture, and Mr. V. H. Sonderegger, State Forester of the Conservation Department, in various sections of the state. Particular emphasis will be placed upon southern timber conditions, better methods of lumber manufacture, closer utilization, fire prevention, and reforestation.

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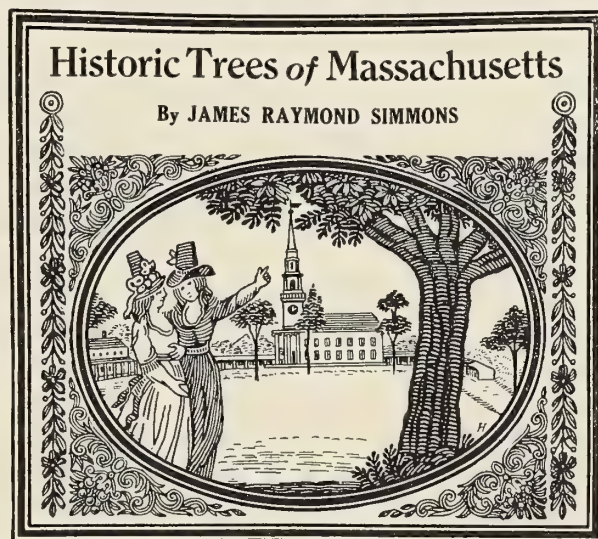
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Trees have ever been connected with human history. Historic trees are those beneath or near which events of continuing interest in the life of State or Nation have occurred. Massachusetts has more of them than any other State in the Union. Some of them were standing before the Pilgrims landed, and still survive. Mr. Simmons describes them all, and shows most of them in the photographs that illustrate the volume.

"The title of the book suggests a topic of purely local interest. In so far as this suggestion militates against the volume, it is unfortunate, for any outdoor enthusiast, any lover of nature, anyone with an affectionate regard for trees, and even the sober historian of America's unromantic development will enjoy the book. The illustrations are clear sepia-toned photographs that delight the eye, and effect an emotional response. It may be whispered that this volume has been listed in trade journals as an example of beautiful bookmaking."—*Chicago Post*.

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WHEN BUG MEETS BUG

Civil war in the insect world is to be further promoted by the United States Department of Agriculture in its fight on the gipsy moth, the insect pest which has caused such great damage to trees and other vegetation in New England and neighboring states. S. S. Crossman and Ray T. Weber, of the Bureau of Entomology, have sailed for Europe to recruit reinforcements for the army of insect enemies of the moth.

In its ancestral European home the gipsy moth was afflicted with hereditary enemies which served to control its numbers. When it was introduced into this country, its enemies stayed behind, with the result that the invader had things all its own way for years. Then the Department of Agriculture imported some of these enemies, which are parasites preying upon the eggs and caterpillars. These were shown to have an appreciable effect in keeping down the numbers of their enemies, and now the department is sending abroad for reinforcements and also to investigate the possible existence of other similar enemies of the pest of the northeastern states.

IN ADDITION to all public expenditures by Federal and state governments in the protection of forests against fire, the amounts now expended by private owners for the protection of their forests total approximately \$1,000,000 a year, according to the annual report of the Forest Service, United States Department of Agriculture. Private outlays for this purpose have been greatly stimulated by the co-operation offered by the Federal Government, and have at least trebled since the work was instituted in 1911.

INSECT-INFESTED TREES MENACE

Healthy appearance is of the utmost importance in shade trees, and no agency is more potent in marring the appearance of these trees than are insects. A defoliated or otherwise bedraggled shade tree is not only worse than none at all but, as a result of insect injury, it is a menace to the health or life of similar trees in the neighborhood.

Practical ways of controlling most of the injurious shade-tree insects are known. Farmers' Bulletin 1169 discusses the more important insects affecting deciduous shade trees in the eastern two-thirds of the United States and gives remedies for them.

The Long Haul From the Woods

[Continued from page 264]

nation, will likewise benefit from the local growing of timber crops and the short haul. It is the solution of the idle forest land question, furnishing a logical use for an area which will otherwise become nearly equal in size to the present total of improved agricultural land in the United States. It thus removes the growing menace of idle forest lands; it affords opportunity for permanent, healthful labor in producing and manufacturing forest crops.

Transient forest industries, with all their unfortunate economic and social consequences, become a thing of the past, and permanent supplies of raw material are assured to local wood-using industries under conditions which permit the existence of small as well as large enterprises. Permanent transportation facilities, so vital in all local development, become essential, and a large volume of traffic is made available. It becomes possible to use profitably the scattered tracts of real agricultural lands characteristic of forest regions. Forest lands become able to pay in perpetuity a fair share of the public revenue, and thereby aid in supporting schools and roads and other public institutions and improvements.

The long haul from the woods is comparatively recent. It has come about almost entirely since the Civil War. While it has not yet reached its extreme in the volume of lumber to be transported for long distances, it is steadily and inevitably tending towards its own downfall, because of the exhaustion of virgin timber supplies, the limitation of transportation facilities, and the excessive burden which it imposes. The rational development which has already begun is towards a short haul to local markets for locally grown timber crops for the great bulk of our lumber and other forest products.

(Because of the pressure of official business, Governor Pinchot's article, THE BLAZED TRAIL OF FOREST DEPLETION, scheduled for this month, will appear in a later number.—EDITOR.)

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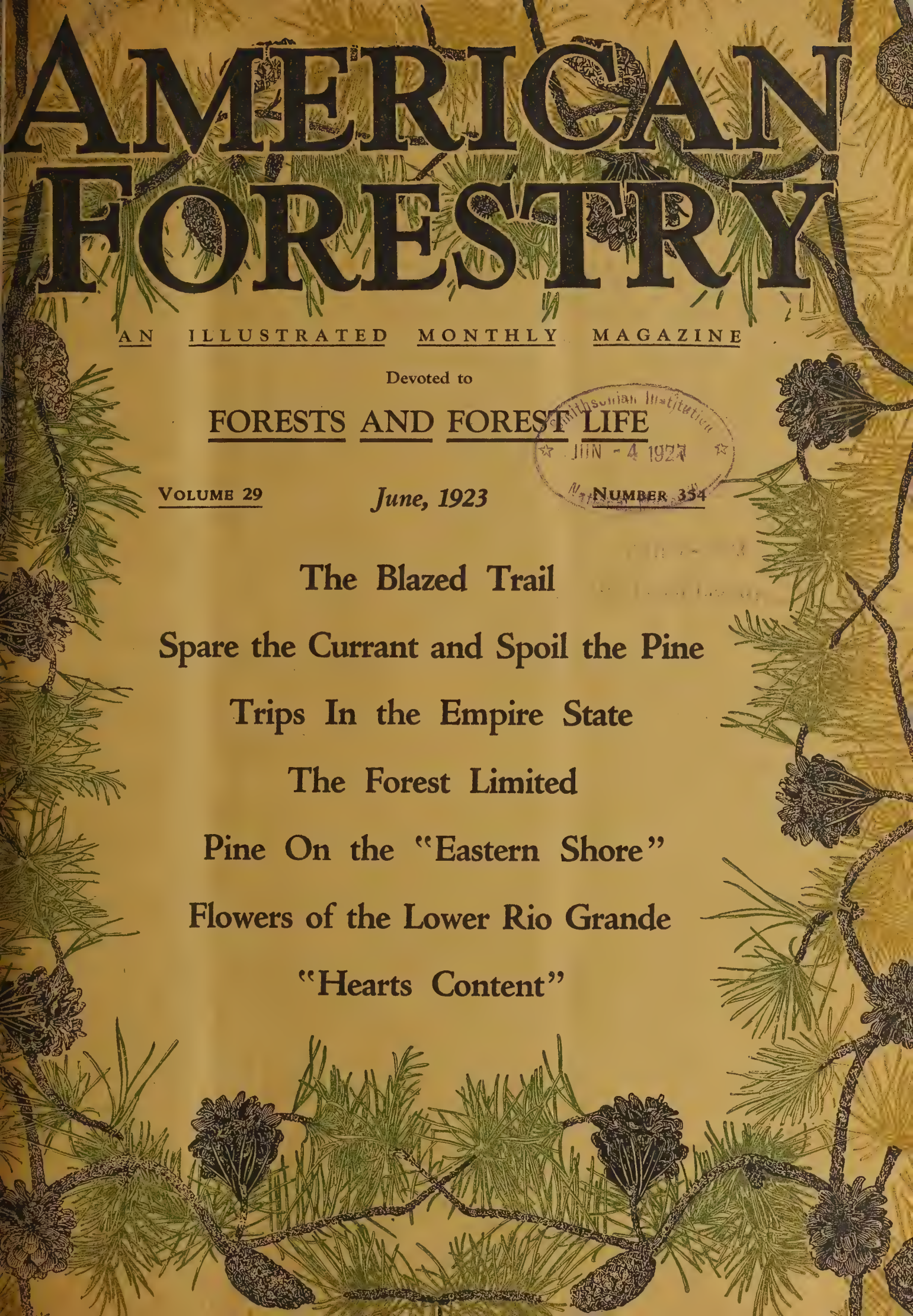
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FOREST RECREATION as a growing need in the

social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor

L. M. CROMELIN, Assistant Editor

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THE "MOTHERS' TREE"

THE WHITE BIRCH HAS BEEN CHOSEN TO HONOR MOTHERS THROUGHOUT THE LAND.

THE STORY OF THE PLANTING OF THE INITIAL TREE IS TOLD ON PAGE 347

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The Blazed Trail of Forest Depletion

BY GIFFORD PINCHOT
Governor of Pennsylvania

THE people of the United States are the most wasteful in the world—wasteful in living, wasteful in manufacturing, and wasteful in handling their natural resources. The annual wastage in our homes, factories, fields, and forests is enormous.

In pioneer days the forests were an obstacle to development. They had to be removed to make way for agriculture, which was a more necessary and profitable use of the land. Among the early settlers, forest destruction by ax, saw, and fire was accepted as normal and necessary. It was good business and sound practice for them to destroy forests and open fields, but unfortunately the same clean-cutting methods as were used for the plowland in the valleys were also employed for the woodland

on the mountains. As a result, we have inherited almost endless stretches of barren mountain slopes which are producing nothing of any value. The only satisfactory crop these lands can produce is a tree crop, and it is our busi-

ness to see to it that this land is kept at work at the only job for which it is fitted.

Forest depletion has wrought havoc in all parts of the world. In this country the economic consequences of

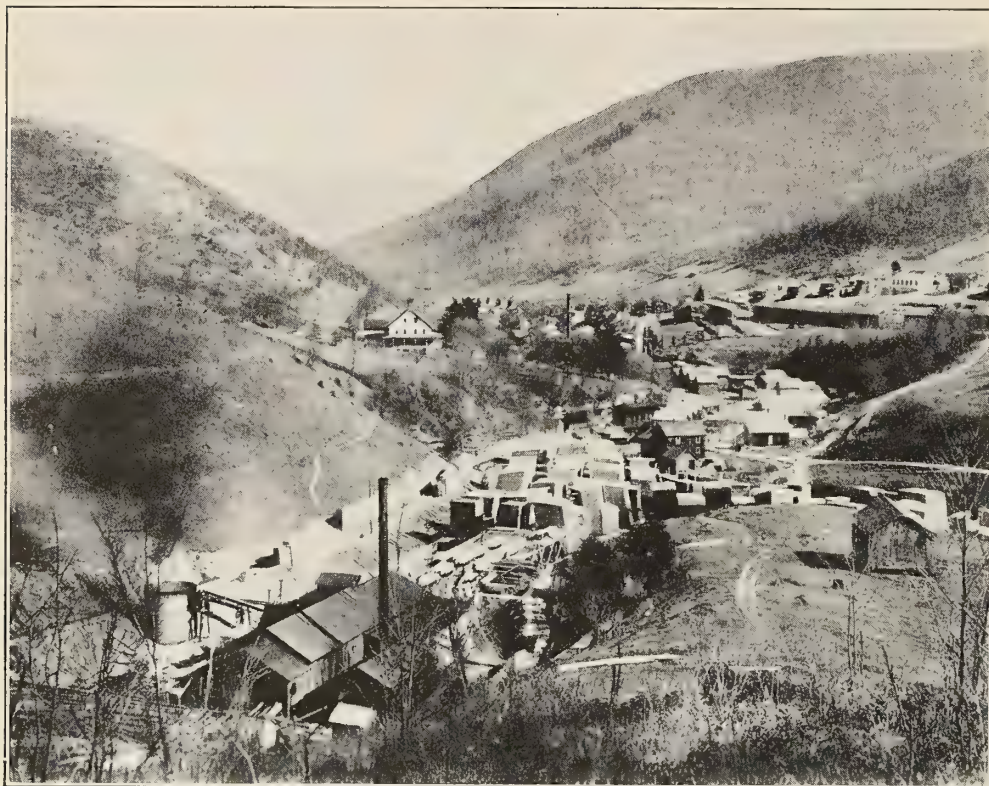
forest destruction are felt chiefly in the older settled part—that is, in the regions where the forests have been cut over again and again and the population is relatively dense.

New England, which was at one time the center of the American lumber industry, now has left but 5 per cent of her original forests. After the best and more accessible forests of the Northeast were cut out, the lumber industry moved to Pennsylvania. Here it operated for many years, but in time lumber production began to wane in the only state



AT THE HEAD OF THE BLAZED TRAIL, WHERE IT IS CUTTING ITS WAY INTO THE HEAVY FORESTS OF THE PACIFIC COAST, OUR LAST STAND OF VIRGIN FORESTS. IN ITS WAKE IT HAS LEFT OVER 300 MILLION ACRES OF STUMPS, STRETCHING FROM THE ATLANTIC COAST TO THE ROCKY MOUNTAINS

that embodies the word "forest" in her name. Then the Lake States became the center of lumber production. As soon as they passed the peak of production the lumber industry moved to the pine forests of the South, where



LEETONIA WAS AT ITS BEST FROM 1913 TO 1917. THEN THE TOWN HAD A POPULATION OF 500 PEOPLE. DURING BUSY SEASONS 100 MEN WERE EMPLOYED AT THE SAWMILL AND TANNERY, 150 MEN PEELED BARK, AND SEVERAL HUNDRED WORKED ON THE LOGGING JOBS. THE SAWMILL (FOREGROUND) HAD A DAILY CAPACITY OF 100,000 BOARD FEET AND THE TANNERY (RIGHT BACKGROUND) HAD AN ANNUAL CAPACITY OF 3,000 CORDS OF HEMLOCK BARK

the pinnacle of production was reached about 1909. Since then there has been a wholesale shift of lumbering to the Pacific coast, where most of our remaining timber is now found. The three states of Washington, Oregon, and California contain about one-half of the timber still standing in the whole country, and fully 60 per cent of the timber supply of our country occurs west of the prairies.

TAKING THE SYLVAN OUT OF PENNSYLVANIA

The original forests of Pennsylvania covered 28,650,000 acres and contained over 500,000,000,000 board feet of lumber and 286,500,000 cords of wood. Now less than 25,000 acres of original forest remain and there is left only one-twenty-fifth of the lumber and one-sixth of the cordwood that we once had. The average acre of original forest contained about 20,000 board feet of fine lumber. The forest land that is now left in the state carries only about six cords of wood, most of which is small in size and inferior in quality.

Only a small portion will make lumber.

In 1860 Pennsylvania exceeded all other states in lumber production. Now she holds eighteenth place and produces less than 2 per cent of the total lumber production of the country. Until 1890 Pennsylvania was able to supply her own timber needs and had a large balance to export. Now more than 80 per cent of the lumber she uses, 74 per cent of the pulp wood needed by the pulp mills, and 75 per cent of the timber required by the anthracite mines is imported from beyond her borders.

Pennsylvania's dependence upon outside sources for wood costs her people at least \$100,000,000 a year, of which \$25,000,000 is paid out for freight. The average person in the state consumes annually over 300 board feet of lumber, of which our forests are supplying only 58 board feet. In other words,

the people of Pennsylvania are consuming six times as much lumber as their forests are now supplying.

During the last thirty years Pennsylvania has been depending upon other states to make up her wood deficit. It is evident now that these states cannot continue their wood-relief work much longer. Their supply is also giv-



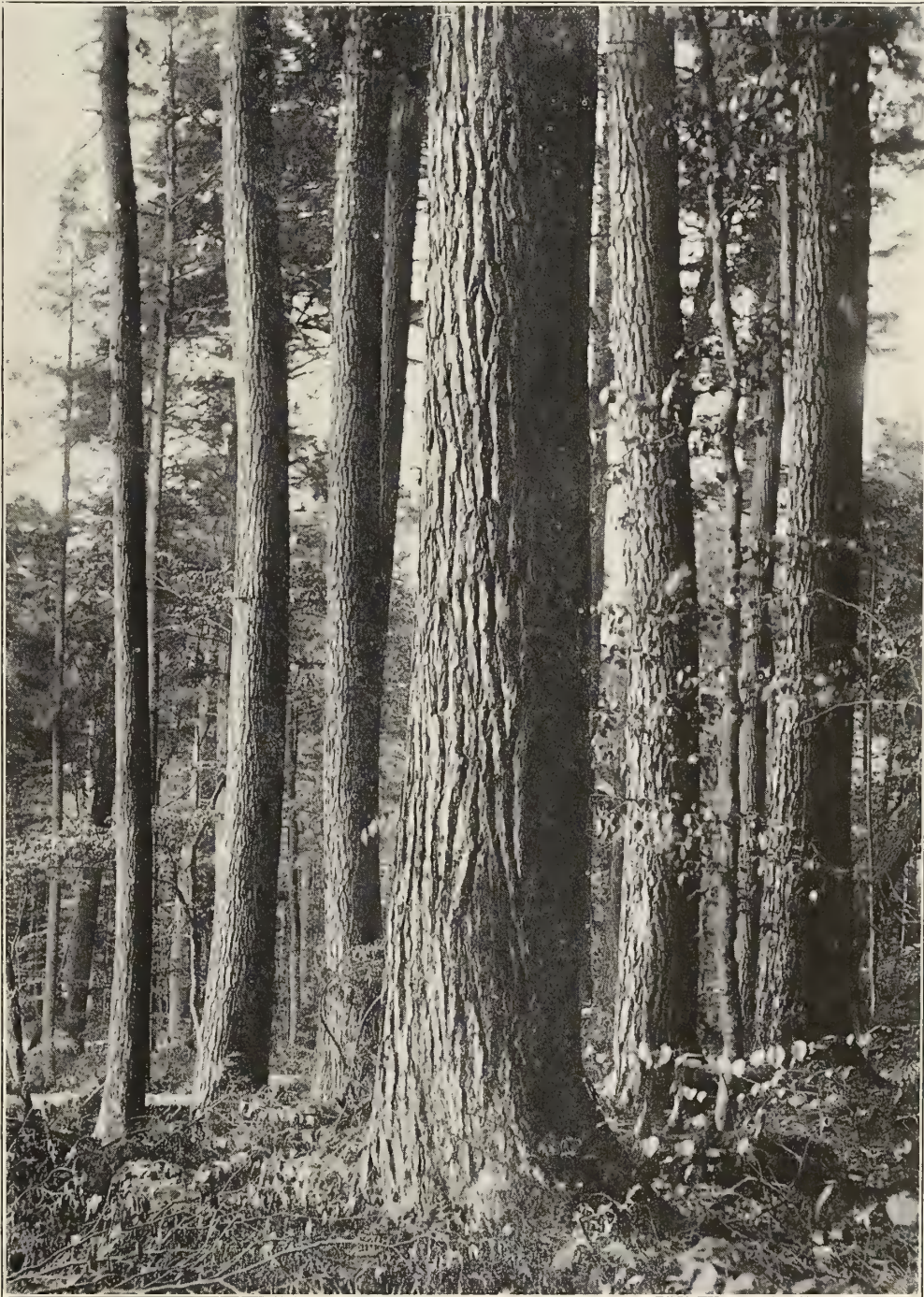
ALL THAT IS LEFT OF LEETONIA. WHEN THE WOOD-WORKING PLANTS CLOSED DOWN FOR WANT OF FORESTS, THE ENTIRE TOWN, WITH 400 ACRES OF LAND, WAS SOLD FOR \$6,500, THE PRICE OF ONE MODEST CITY HOME

ing out. It is clear that if the people of Pennsylvania want sufficient wood to meet their needs Pennsylvania must produce it. There is plenty of forest land in Pennsylvania—more than 13,000,000 acres—which, if handled properly, will satisfy all the wood needs of the people of the state. It is capable of producing annually at least 2,400,000 board feet of lumber and 4,500,000 cords of wood. This possible yield is greater than the largest annual output of the state in the banner year (1900) of lumbering in Pennsylvania.

For three centuries the American lumberman has been roving over the country. He is now approaching his end, for most of the timber has been cut. The lumberman did not consider the land. All he wanted was the wood. His business was making the wilderness yield a commodity of civilization, regardless of how it was produced or whether it could be renewed. If he could not get it at one place, he moved to another. The time is now come when he cannot move again, for he has no place to go. Where forests of great and glorious trees once stood, devastated hillsides now remain, and famished forest communities are struggling for an existence amidst the bleak stretches of unproductive stump land.

Let us not blunder along blindly with the false notion

that we have no forest problem in urgent need of solution. The forest problem is at the very foundation of our national existence. The prosperity of our states, the welfare of our communities, and the lives of our citizens depend upon the products of the forest.



OUT OF THIS STAND OF GIANT HEMLOCKS ROSE THE TOWN OF NORWICH, WITH THE GREATEST SAWMILL THAT EVER OPERATED IN PENNSYLVANIA. THE STORY OF NORWICH IS A FOREST TRAGEDY; READ IT

THE STORY OF LEETONIA

Let me tell you the story of a few typical lumber towns of Pennsylvania and you will see clearly the blazed trail of forest depletion.

Fifty years ago a vast and unbroken forest covered the extreme southwestern part of Tioga County, Pennsylvania. As late as 1870 only two families lived on the site that later became the busy lumbering town of Leetonia. Then lumbering was just beginning in the region and only white pine was cut. Other trees, such as hemlock, birch, beech, and maple, had no market value. As many as 10,000,000 board feet of white pine were taken out of the region about Leetonia

in a single season and floated down Cedar Run. In those days the choicest white pine brought from \$3.00 to \$3.50 per thousand board feet.

After most of the white pine about Leetonia had been cut out, a market developed for hemlock bark. The bark supply was so great that in 1879 a tannery, with an annual capacity of 3,000 cords, was established. Almost over

night the settlement of two families grew to a town of two hundred people. In 1882 a railroad came to town, and in 1897 a sawmill with a 6-foot band saw was added to the town's business equipment. This mill was operated continuously until 1913, when it was replaced by a larger and a better mill, with a daily capacity of 100,000 board feet.

Leetonia was at its best from 1913 to 1917. Then the town had a population of 500 people. Many men were at work in the woods preparing logs for the sawmill and peeling bark for the tannery. More men were employed at the sawmill and in the tannery.

In 1917 it became evident that the town was doomed, for the supply of wood and bark was beginning to give out. Each succeeding year the reserve supply became lower and lower. In the early winter of 1920 the bark supply was completely exhausted, and the tannery, which had been in operation continuously for more than 40 years—to be exact, since 1879—was closed down, and in 1921 the last log was cut at the sawmill.

A TOWN THAT SOLD FOR LESS THAN A HOME

The closing down of the only two industries of the town was the next to the last chapter in its existence. The last chapter was the sale of the whole town of seventy houses, including the tannery, the sawmill building, and 400 acres of land, for \$6,500, the price of one modest city

home. There was nothing left for the people to do but pack up and get out. This they did in a hurry, for in the fall of 1922—one year after the sawmill shut down—only four families remained in the town.

Three of the four families moved out in the spring of 1923. This left only one family—that of the Forest Ranger. Within a circle of six-mile radius only one other family resides. These two families are the only human inhabitants and the sole guardians of 200,000 acres of unbroken forest land that completely surrounds their modest mountain homes.

I know of no more necessary and honorable work for the citizens of any state than that of forest restoration. A bare beginning has been made at Leetonia. Just one Forest Ranger is now on the job. He has willingly separated himself from the rest of the world to assist in building up new and better forests. But he cannot handle the situation alone. More helpers will be needed as the work progresses, for vast areas of forest land are in urgent need of protection from forest fires, and a valuable forest growth must replace the scanty scrub on the hills that were formerly covered with dense stands of big trees.

GARDEAU, REARED BY GIANT HEMLOCKS

Forty years ago Gardeau was a young and promising lumber town in northern Pennsylvania. The only industry the town ever had was a sawmill, which made and



THE BIG AND BUSY SAWMILL AT NORWICH. IT HAD A DAILY CAPACITY OF 300,000 BOARD FEET AND WORKED UP SOME OF THE FINEST HEMLOCK LOGS THAT PENNSYLVANIA EVER PRODUCED, BUT ITS ACTIVE LIFE WAS LESS THAN TEN YEARS



THIS IS ALL THAT WAS LEFT OF NORWICH IN THE WINTER OF 1922-1923. WHEN THE FORESTS AT NORWICH GAVE OUT, IN 1921, NOT A SINGLE PLACE WAS LEFT IN PENNSYLVANIA WHERE THE MILL COULD BE RE-ESTABLISHED, AND THE PEOPLE OF THE TOWN WERE LEFT HIGH AND DRY

kept the town. It had a daily capacity of 200,000 board feet and remained in operation until 1899, when all the lumber was cut out and there was no more work for it to do. For twenty years the town was busy and prosperous. At its height 1,000 people lived there and in nearby camps.

In 1899, when all the forests around Gardeau were cut out completely, the sawmill had to close down. There was nothing left for the people to do but move. Most of them went about thirty miles northwest to Granere, where they started up another lumber town in the midst of equally fine forests. Today nothing is left of Granere and only five people live at Gardeau.

THE WRECK AT CROSS FORK

In 1893 virgin forests practically covered the hillsides overlooking the site that in a few years became the biggest and busiest lumber town that Pennsylvania ever had. It was just thirty years ago that the Lackawanna Lumber Company broke ground for the town of Cross Fork. Then there were only five or six families in the entire valley. In 1895 a sawmill was erected. It burned down in 1897. Another one was built, which burned down in 1903. In the autumn of the same year a bigger and better mill was in full swing. Two years of lumber output of this big mill would more than encircle the globe with boards an inch thick and a foot wide.

The sawmill was the heart of the town. The annual output of rough lumber was valued in the neighborhood of \$1,000,000. In addition to the sawmill, a stave mill, a kindling mill, a shingle mill, and a hub factory helped to bring business to the town. Every part of the town was busy, but back beyond the town the forest was filled with men at work cutting logs and bringing them to the

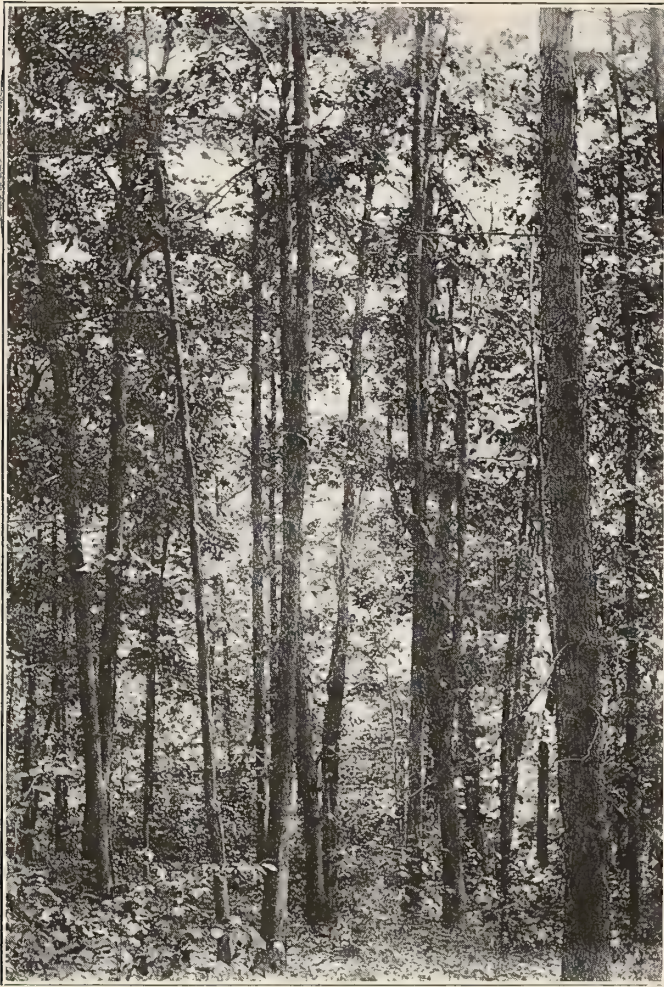
mills. Not less than 5,000 lumberjacks were engaged in the woods. The town itself had no less than seven hotels and its post-office was one of the few in Potter County that issued international money orders.

In the early days few people thought that the forests about Cross Fork would ever be cut out, but in April, 1909, the big sawmill was closed down, and by autumn of the same year the people were leaving the town in large groups. In the winter of 1912-13 the stave mill was closed and in the fall of 1913 the railroad discontinued service.

NEW FORESTS ARE RESTORING THE TOWN

Almost over night Cross Fork became a deserted village. Its decline was even more rapid than its rise. For a number of years the town was dead, but it is being resurrected again. Much of the land about the town has been purchased by the state, and forest restoration is now moving ahead. Where the lumber company left almost endless stretches of desolation, the Department of Forestry has developed valuable young forests.

For a short time the town of Norwich held a commanding place in the lumber industry of Pennsylvania. As late as 1909 the entire town site was covered with a dense stand of big hemlock trees. Individual acres were stocked with 50,000 board feet of lumber, and in addition yielded 25 cords of bark. Nowhere in the state were better stands of hemlock found. My friend and co-worker, Colonel Henry W. Shoemaker, who since his boyhood days has been studying the people and the forests of northern Pennsylvania, informs me that he saw the site of Norwich before the town was born, at its height, and after its death. He relates that the first chapter of the rise of this unique lumbering town was the erection of a few shacks



THIS IS THE KIND OF HARDWOOD STAND THAT WILL DEVELOP IN PENNSYLVANIA IF FOREST FIRES ARE KEPT OUT OF THE WOODS

and shanties and the building of a general store in a small opening cut out of the dense forest of big hemlocks. Late in the spring of 1910 tree-felling and bark-peeling began. Then followed the lumbering operations, the erection of the sawmill, and the building of houses. By 1912 a busy lumbering town was hard at work.

At its height the town had a population of 2,000 people. Many more men worked in the woods. They lived in shanties, shacks, and camps scattered throughout the Goodyear Lumber Company's holdings of 30,000 acres. The mainstay of the town was the sawmill, with a daily capacity of 300,000 board feet. It was regarded as the most modern and best-equipped mill that ever operated in the State of Pennsylvania.

Near the sawmill was a kindling-wood plant, and beyond it was a stave mill and a hardwood distillation plant. To

supply all these industries with raw material was a big job and required an enormous amount of equipment and an efficient organization. Over one hundred miles of logging railroads were maintained to bring the wood into the plants. In those days Norwich was a busy place. It turned out 90,000,000 board feet of lumber in a single year.

THE FOREST TRAGEDY AT NORWICH

When lumbering operations started almost everybody believed that the timber supply was inexhaustible. The most conservative estimates made the timber supply sufficient for not less than 25 years. But that all predictions were incorrect became evident as early as 1917. Then it was seen that the town was doomed. Its active life was less than ten years, for the mill that started in the fall of 1912 closed down forever on August 20, 1921.

The story of Norwich is a forest tragedy. When the timber at Cross Fork was cut out the people went to Betula, and when no forests were left about Gardeau the people went to Granere. When the sawmill equipment was no longer needed at Leetonia, it was shipped to Kinzua; but when the supply of timber at Norwich gave out, in 1921, not a single place was left in Pennsylvania where the mill could be re-established, and the people of the town were left high and dry.

In the fall of 1922 less than twenty families remained in Norwich. All of the remaining workmen were employed in dismantling the mill, tearing down houses, and lifting railroad tracks. According to present plans, not a single human being will be left in the town after July, 1923. Discouragement and despair are written everywhere in the village—in the faces of the people as well as in the condition of tumble-down houses and grass-covered streets. The story of Norwich is the saddest chapter in the whole history of Pennsylvania lumbering.

[Continued on page 374]



ALMOST ENDLESS STRETCHES OF DEVASTATED FOREST LAND OCCUR ON THE PLATEAUS AND MOUNTAIN SIDES OF PENNSYLVANIA

President Harding Reassures Forest Committee

Representatives of more than thirty organizations, who call upon the President, are told that reduced appropriation for Eastern Forests is of temporary character

THERE has been no change in the Federal policy with respect to acquiring forest land under the Weeks law, President Warren G. Harding told a committee of representatives from more than thirty different organizations which called on him at the White House on May 2, urging a restoration of the sum formerly appropriated for this work. President Harding expressed himself as in hearty sympathy with the Weeks law program and declared that the reduced appropriations for the work during the last two years are of a temporary character, made necessary by the urgency of governmental economy along all Federal lines.

The President said that the Administration thoroughly appreciates the forest situation and the urgency of going forward with remedial measures, and he expressed the hope that the country will be sufficiently restored to normalcy by next year to permit continuing the work contemplated by the Weeks law on an enlarged scale. He stressed very clearly, however, his feeling that the individual states should enter into active co-operation with the Federal Government in the work of forest protection and forest restoration.

The committee which called on the President represented organizations whose membership numbers many thousands of citizens who are urging that the acquisition of forest land under the Weeks law be resumed to its former scale. The spokesman for the committee was Elbert H. Baker, a vice-president of the American Forestry Association, of Cleveland, Ohio, representing The American Newspaper Association. Mr. Baker's statement to the President is quoted in part below:

"The act to acquire forest lands by purchase at the headwaters of navigable streams, known as the Weeks law, was signed by President Taft on March 1, 1911. It appropriated \$11,000,000 to be expended, at the rate of \$2,000,000 annually, by the National Forest Reservation Commission, after preliminary investigations by the Geological Survey, the Forest Service, and the Department of Justice.

"More than two million acres (2,142,476) have been acquired under this law in eleven states, at an average

price of \$5.06 per acre. The commission has limited its purchases to certain restricted areas in the White Mountains and Southern Appalachians, with the single exception of one small purchase in Arkansas to connect two pieces of forest land already owned by the government. Of the purchases to date, 440,000 acres are in the White Mountains of New Hampshire and

Maine; 74,000 acres are at the headwaters of the Ohio River in Pennsylvania, and 207,000 acres at the headwaters of the same river in West Virginia; the remainder, or one and one-half million acres, in the southern states from Virginia to Georgia.

"Already a number of these tracts are self-supporting and collectively yield an average of \$100,000 annually from timber sales. These lands have greatly increased in value and are estimated to be worth from 50 to 100 per cent more than the total government expenditure. They are therefore an excellent investment. In the White Mountain region 46 per cent of the original plan has been carried out; in the South something more than 25 per cent.

"During and since the war, the appropriations have



DELEGATION WHICH CALLED UPON PRESIDENT HARDING ON MAY 2 IN BEHALF OF MORE RAPID EXTENSION OF FEDERAL FORESTS IN THE EAST

[Continued on page 375]

Caterpillars à la Piute

An Uncommon Moth Which Defoliates the Jeffrey Pine and in Turn Is Eagerly Devoured by the Indians

BY I. F. ELDREDGE

COLORADIA PANDORA! A pretty name for most anything from a tooth paste to a movie actress! This dainty name, however, has already been given by entomologists to a moth commonly known as the Pandora moth. This creature may be a thing of beauty in the moth form—I don't know; I never saw one—but in the caterpillar stage it is nothing to brag about. Besides being homely, the caterpillar is in rather poor repute with foresters, having been accused of defoliating trees. But even so, without beauty or principle, the *Coloradia Pandora* caterpillar is held in high esteem in some circles. As some people take to the mountains in the summer to pick huckleberries and others go to Havana to enjoy the relative humidity, so do the Piute Indians in the Mono Lake country of California periodically visit the Jeffrey pine forests on the eastern slopes of the Sierras to enjoy the succulent caterpillar of the Pandora moth.

This moth lays its eggs in the bark of the Jeffrey pine. After hatching, the larvæ ascend the tree and feed on the needles of the pine. They hibernate during the winter

in the tops of the trees, and in the second summer commence to descend the tree trunks. By this time they are fat and ready for a harvest.

When the nomadic Indian bands in the Mono Lake country get word from their trusty scouts that the Pandora is out in full force and about to ripen, they drop everything, load up their ponies and squaws, whistle up the dogs and the children, dump the coffee grounds on the fire, and pull out for the worming grounds, where all hands get to work on the joyous harvest of the heaven-sent manna. Shallow trenches with perpendicular sides are scooped around the bases of the trees. The caterpillars descending are trapped here and are gathered by the Indians, who dry them and put them away for future use.

THE PIUTE'S PANDORA PATTIE

Now the Piute doesn't go to all this trouble to gather worms just for the pleasure of collecting, exquisite though that might be; but, believe it or not, he gets them to eat.



Photograph by J. E. Patterson, Bureau of Entomology

A VIRGIN STAND OF YELLOW-PINE TIMBER NEAR WOCUS BAY, UPPER KLAMATH MARSH, WHICH HAS BEEN SEVERELY DEFOLIATED BY THE PANDORA MOTH. THE SEVERITY OF THE DAMAGE TO THE TREES IS CLEARLY MARKED BY THE WAY IN WHICH THE LIMBS HAVE BEEN STRIPPED OF THEIR NEEDLES. THIS OUTBREAK OF THE MOTH WAS INVESTIGATED IN AUGUST, 1921, BY J. R. PATTERSON, OF THE BUREAU OF ENTOMOLOGY

Nice, fat, hairy caterpillars may not appeal to you and me, even if we can eat raw oysters without a qualm, but to the tired Piute business man a Pandora pattie or a cream of caterpillar soup supplies just the fillip a jackrabbit-jaded appetite needs. I do not know in what different ways the caterpillar is prepared for eating, but I gained the impression from one Piute epicure that a common dish was a kind of thick stew.

According to Dr. J. M. Aldrich, of the United States National Museum, this food is called pe-aggie. "This is an important food of the Indians about Mono Lake," says Dr. Aldrich, "in spite of the fact that it only lately came to the notice of the whites outside the immediate region. Mr. Way



Photograph by Dr. R. W. Shufeldt

THE PANDORA MOTH, WHOSE FLIGHT AWAKENS THE NOMADIC INDIANS OF THE MONO LAKE COUNTRY IN ANTICIPATION OF A JOYOUS FEAST. THE ACTUAL SIZE OF THE MOTH IS ABOUT TWO THIRDS THAT SHOWN IN THE PHOTOGRAPH. ITS BODY IS A DARK EARTH-BROWN AND ITS SUPERIOR WINGS ARE ONLY A TRIFLE LIGHTER. THE INFERIOR WINGS ARE A PALE TAN



Photograph by courtesy of Dr. Aldrich, U. S. National Museum

THESE ARE NEITHER RAISINS NOR PRUNES, BUT DRIED LARVÆ OF THE PANDORA MOTH, WHICH THE INDIANS HIGHLY PRIZE AS AN ARTICLE OF FOOD. THESE SPECIMENS WERE BOUGHT FROM AN INDIAN WOMAN AT MONO LAKE, COLORADO, BY J. M. ALDRICH

reports that Chief Jake Garrison put up a ton and a half this past summer (1920) in the woods just south of Mono Lake. He says the caterpillars are regarded as a great delicacy, and only a few at a time are used to flavor a stew. In the case already reported by me, however, it appeared that the stew was made entirely of caterpillars. I found the larvæ tough and the stew insipid from lack of salt, the flavor resembling to my palate the taste of linseed oil. I could not from my own experience pronounce it a delicacy. However, *de gustibus non disputandum.*"

I have never indulged, myself, in any of the Piutian table delicacies and hope that I never shall, but once I came very near it—all on account of *Coloradia Pandora*, too. In the summer of 1907 I was chief of party of a hardy crew of timber cruisers surveying and estimating timber in the Inyo National Forest in California, just south of Mono Lake. We were working in a large body of Jeffrey pine on a plateau hanging 8,000 feet up on the steep east slopes of the high Sierras, at the head of the Owens River Valley. Early in the game I had contracted with an aged Piute Indian and his son the job of packing grub and other camp supplies into our camp from the base at Mono Mills. The old Indian used his scrawny ewe-necked pintos and his intimate knowledge of the 45,000-acre tract of timber to good advantage and soon established a reputation for turning up at the appointed time, usually once a week, at our cook tent with a fresh supply of bacon, beans, flour, Tea Garden drips, and smoking tobacco.

THE FLIGHT OF JIM CROSS HIS MARK

All went well for a couple of months, and we had gradually worked out to the far edge of our timber, about 18

miles from our base, and were camped on Dead Man's Creek, when old Jim Cross His Mark, as our Indian hero was carried on the expense vouchers, failed to show up at the appointed time. Nor did he appear the next day or the day after that. Geechi, the Jap cook, who used to be a sea captain before he took up cooking, and I took stock and decided that by adding a little diplomacy to what grub we had we might be able to hold our bunch of

and his band had struck their tents and had gone aworming.

Well, to finish my story, I arranged to have supplies sent in the next day, and, taking on a ham and a half sack of flour, I started out afoot to lift the siege of Geechi, the cook, on Dead Man's Creek. I made it all right about 11 o'clock that night, but that ham grew to a quarter of beef and the half sack of flour took on the shape and weight of a grain elevator long before I picked up the soul-warming light of our camp fire under the pines. Can you blame me if I shy a bit even yet when Coloradia Pandora is mentioned? A pretty name, yes, but in stews I confess that my taste runs more to the Hibernian than to the Piutian school of dietetics.

THAT POP-EYED MOONSHINER

A pop-eyed moonshiner, with whiskers like a cat,
Wuz settin' on a stone fence a swingin' of his hat,
When along come a Ranger, ridin' mighty bold.
"Howdy," says th' Ranger, speakin' short an' cold.
"Fire on th' mountain. Git a fork an' trot along."
Then he rid down th' road a singin' of a song.

With a jump and a snort an' a feline squall,
Thet Tom-whiskered 'shiner fell off thet wall.
"Gittin' so a man kain't do a durned thing;
Kain't even make likker 'longside a mountain spring.
Thet fire's been burnin' fer fourteen year,
An' nobuddy ain't seen it but th' gol-durned deer."

"Now a Ranger comes a snoopin' an' a causin' talk.
Guess I'll git me a gun an' go make him walk."
Thet fuzzy-faced 'shiner with th' protuberant eye,
Sneaked up to th' fire to play "I spy,"
But th' Ranger wuz quicker an' bumped his head;
Took away his gun an' his powder an' lead.

Now th' moonshiner's workin' on th' railroad gang,
'Cause if he'd tried to fight back, he knew he'd hang.
Th' Ranger's got a still fer cookin' dog-feed,
An' th' pots an' th' kittles is a holdin' pine seed.
Th' "cats"* ain't a yowlin' in th' hills no more,
An' th' doggoned fires ain't a makin' folks sore.

—Charles V. Brereton.

* Stills.

Again the Old Order Changeth

By C. F. KORSTIAN

For many years hemlock bark, so far as the writer is informed, was the only coniferous material used in the tanning industry in this country. It is, therefore, of interest to find an extract plant which has been using red spruce bark for the production of tannic acid. This plant, which is located in West Virginia, has been obtaining yields of 9 to 11 per cent of tannic acid, and occasionally as high as 12 per cent, from the spruce. Because of peculiar conditions connected with the administration of this operation, the spruce bark is commanding \$14 per ton, \$2 more than hemlock bark—a differential occasioned in part by the greater cost of exploitation of the spruce bark. Although the extracts from both species are made to 25 per cent tannin, that from the spruce is lighter in color than the hemlock.



Photograph by J. E. Patterson, Bureau of Entomology

SHOWING PUPÆ OF COLORADIA PANDORA IN LOOSE PUMICE SOIL, WHICH HAVE BEEN EXPOSED BY REMOVING THE GROUND COVER AND SURFACE SOIL. THE PUPÆ ARE DARK BROWN IN COLOR AND ARE 25 MILLIMETERS LONG AND 12 MILLIMETERS WIDE. THEY ARE GATHERED BY THE INDIANS FROM THE BASE OF THE TREE, DRIED, AND ARE THEN READY FOR A PANDORA STEW—A DISH OF GREAT DELICACY AMONG THE PIUTES

plain but hearty eaters from stampeding for four or five days longer, by which time the pack-train would surely arrive.

But it didn't, and we waited another day amid nasty looks from the bean-eaters and pointed remarks to the general effect that grown white men couldn't be expected to do four miles of line a day on a breakfast of oatmeal without salt, sugar, or milk, and a lunch of the same, only cold and jellified, unless they could return to camp at night to a supper more sustaining than Worcestershire sauce soup and oatmeal, again without salt, sugar, or milk. Still the noble red men did not turn up; so on the sixth day I footed it in across two mighty mean looking mountain ridges coated with volcanic cinders, that kept me in second all the time, 18 miles, to Mono Mills, where I arrived badly blown, but still able and more than anxious to kill out at least one Piute family.

THE CALL TO GO AWORMING

The place near the store where old Jim's band had camped was as empty as a dog-house. Fido's dead—no brush wickiups; no 90-year-old squaws; no flea-be-deviled dogs or fat-faced children; nothing left but tufts of rabbit fur and a few well-polished horse bones. At the store the commissary man told me that word had come two weeks back of an outbreak of caterpillars in the locality off to the north, and that over night old Jim

Rushing Supplies via the "Forest Limited"

BY FRED MORRELL

JUST what the term "forest fire" means to us depends on where we live and what has been our experience. To the citizen of Denver, or other towns in the great plains to the east of the big forest areas of the Northwest, it may bring only a picture of a beautiful "fire sun," hanging like a blood-red ball out from the horizon in the late afternoon or the early morning. To the resident in the forest region it may bring up a picture of heavy smoke pall, blackened ruins of forest and homestead, or a terrible, vivid memory of loved one, or life's hard-earned savings lost. To the experienced Forest Service men of the Northwest it brings memories of weeks of anxiety; of days and nights on the fire line or the trail, with a pall of never-lifting smoke that obscures from sight even the nearest mountain or hides the danger of a fast-approaching fire; recollections of the hardest work and the most nerve-telling strain; of loss of sleep; of air filled with ashes and the smell of burning forests; of danger and excitement and responsibility for lives of men and public and private property of untold values. And through it all, the success of battle depends more often than not on the pack-train in supporting the front lines, far back in the mountains, with food and equipment.

The task of moving two hundred tons of food and equipment a distance of thirty miles does not mean much to a railroad. It is not a big task for a fleet of modern trucks over hard-surfaced roads. But when it has to be done on pack animals through some of the roughest mountain country in the world, where the only development consists

of poorly constructed trails, and where swift mountain streams must be forded or rafted and forage for pack stock is hardly to be found at all, it assumes, like the proverbial inch on the end of a man's nose, much more serious proportions.

This, in brief, was the task in transportation which confronted the Supervisor of the Clearwater Forest of Idaho during a recent "fire season." Let us take a fairly close-up look at it, because it is typical of the problem which confronts many forest men throughout the west summer after summer.

An average load for a pack animal through such country as has been described is two hundred pounds, and the average distance he can make with such a load is about twelve miles per day. In other words, it will take him five days to take this load of two hundred pounds thirty miles and get back to his starting point for another load. Not very fast traveling, you say. Remember that he is making this distance up and down mountains, fording dangerous streams, jumping over logs, and threading his way as best he can between trees, and scrambling over underbrush. And recollect, too, that there will be many a night when the grain that he carries plus the small amount of forage he will find will leave him hungry. If he "stands up" to a season's work with an average of twelve miles a day behind him, he will be an animal worthy to take his place among the "physically fit" and the "mentally capable."

Now, to measure the job with this yardstick, if our



THE "FOREST LIMITED" ON THE TRAIL

A pack-train taking in supplies to fire-fighters on the Flathead National Forest in Montana. The average load for a pack animal is 200 pounds and he usually makes twelve miles a day through very rough country.



A BIT OF DEEP WATER

Ranger crossing a flooded section of the South Fork of the Boise River, in the Sawtooth National Forest, Idaho.

good horse, Jack, moves two hundred pounds—one-tenth of a ton—six miles in a day (and returns for another load, making twelve miles traveled), he accomplishes six-tenths of a ton-mile of work. Moving two hundred tons thirty miles, which is the average distance that the material had to be moved from the end of the truck road to its first place of use within the forest, represents 6,000 ton-miles, or 10,000 days' work. In addition to moving the amount of material, consisting of food supplies, tentage, bedding, tools, food, powder, and other equipment, much of it had to be moved from camp to camp as it was needed in successive fires; and when the season was ended, the equipment had to be assembled for repair and storage. Since there were small facilities for this within the forest, much of it had to be taken back to the point of starting. This work added an estimated 25 per cent to that of transportation in to the forest, or an additional job of 1,500 ton-miles, or, roughly, 2,500 days' work, making a total of some 12,500 unit days.

Because snow and severe weather come early and stay late, all this work had to be done in the months of June, July, August, and September. It is at once apparent that our faithful friend, Jack, had to have help. Time waits for no man, and a forest fire only for something to burn. If you are skilled in short division you can readily ascertain that if the job were distributed evenly over the whole 120-day period and each horse worked every day, Jack would need some one hundred assistants to do the job. But the "breaks" that come in a bad fire season don't leave the problem as simple as that. The supervisor could not look ahead at the beginning of the season and know how many men and how much equipment he would need and when they would be needed. There were a million acres of timber land on which were millions and millions of trees. In any one of these lightning might start a fire which would spread to the surrounding forest before a

crew could reach it and put it out. The record shows that one hundred and eleven such fires were set during the season. So the work bunched up. Fires being set by lightning obviously start suddenly and come in bunches immediately after dry lightning storms. Between July 21st and 31st, sixty-eight of the total of one hundred and eleven fires were started. The supervisor was provided with a train of fifty pack animals, which was sufficient to

O Wonderful Horse

"O horse, you are a wonderful thing: no buttons to push, no horns to honk; you start yourself, no clutch to slip; no spark to miss, no gears to strip; no license-buying every year, with plates to screw on front and rear; no gas bills climbing up each day, stealing the joy of life away; no speed cops chugging in your rear, yelling summons in your ear. Your inner tubes are all O. K. and, thank the Lord, they stay that way; your spark plugs never miss and fuss; your motor never makes us cuss. Your frame is good for many a mile; your body never changes style. Your wants are few and easy met; you've something on the auto yet."—Ranger H. R. Elliott, of the *Malheur*.

supply the regularly employed lookouts and patrolmen and a reasonable number of fire-fighters. When the number of men was increased, as it was up to a maximum of six hundred at one time, additional stock had to be found on short notice. The supervisor had prepared, so far as possible, for this emergency by learning the whereabouts and availability of privately owned pack-trains, and the



AN OLD FAVORITE

This is pack-horse "Whitey" getting loaded up for the day's trip.



ADJUSTING A PACK EN ROUTE

It is often necessary to rearrange the packs when on a long "trek" with a pack-train, and a part of the ranger's duty is to see that such adjustments are properly made.

excess had to be taken care of by mobilization of this stock. The largest number of stock in use at any one time, including the fifty owned by the government, was three hundred and sixty-six.

While this is a story of transportation only, you will want to know the need for so many tons of food and equipment. I have said that at one time there were approximately six hundred fire-fighters in the forest. During the eighty-day period that the season lasted, there was an average of approximately three hundred and seventy-

five fire-fighters employed, and for a period of one hundred days an average of about fifty rangers, lookouts, patrolmen, trail-builders, cooks, packers, etc., were employed for the regular protection force. About ten pounds of food supplies, feed, and equipment are required per day for each man. This quantity plus the extra moving between camps mentioned above gives approximately the two hundred tons estimated.

Neither would the reader get a correct idea of the problem without a word regarding the force which had to



TRAIL BRIDGE OVER DEADWOOD RIVER, IDAHO

The difficult problem of transportation has been manfully met and progress steadily made toward the construction of an adequate trail system. Its accomplishment will mean much to the men of the Service in the elimination of many hardships.

handle the job of transportation as one part of their task during the fire season. The supervisor was provided with two fire aids—experienced men who helped to organize and oversee the work—six rangers, and two experienced clerks. All the rest of the force was a temporary summer

State of Connecticut and considerably larger than the combined area of Rhode Island and Delaware. Within these three forests there are at the present time a total of fifty-six miles of roads and 1,450 miles of trails. The country is of the typical western rough mountain type and travel



READY TO LEAVE THE RANGER STATION

The pack-train loaded with "eats" for the boys on the front of the fire-line, who must look to the ranger station for support and what comfort they can get during their hazardous duty.

organization. A small percentage of them had been on the work before and knew their jobs at the opening of the season. Of course, men had to be hired, supplies received, crews organized, bills paid, etc. For a force of eleven trained employees to secure and organize a force with a maximum of six hundred, provision them, and get them out into an undeveloped mountain region to points at an average distance of thirty miles from the nearest supply base—a force averaging about four hundred men—in a season of four months, is quite some task. It is not claimed, and you will hardly expect, that the highest efficiency was obtained from all these men.

Many other interesting phases of the job of discovering and fighting forest fires might be discussed, but this is a story of a transportation problem. So far, it has dealt with the Clearwater Forest alone. Perhaps a better idea of the inaccessibility of this territory might be given by considering available routes of travel on the Clearwater, Selway, and St. Joe Forests, which lie just west of the Montana-Idaho divide and from the city of Wallace on the north to the divide between the Selway and South Fork of the Clearwater River on the south, embracing a tract of nearly three million six hundred thousand acres of land. A comparison will serve better to give an idea of the size of the area. It is somewhat larger than the

across it by horse is impossible except on road or trail. Although severely burned in the past, the three forests still contain a stand of over twelve billion feet of merchantable timber—enough to build one million two hundred thousand substantial bungalows. The value of this timber to the nation, if converted into lumber at \$25.00 per thousand, would be three hundred million dollars.

Progress is being made slowly toward the construction of an adequate trail system. Appropriations for the coming year will allow for much more rapid progress than in the past. But if the reader will draw a diagram of a section of his own state containing five thousand square miles, stand this country "on end," cover it with almost impenetrable forests and brush, put in fifty-six miles of roads and 1,442 miles of trails, and then consider means of transportation over these routes, he will get some idea of what the difficulties are in the transportation of materials necessary for the protection of many of our western National Forests.

"LIGHTNING LINE" sayings: There would be a terrible shortage of lumber if splints were placed on broken promises.

Spare the Currant and Spoil the Pine

How the little currant bush, one-time neighborly neighbor of the white pine, is harboring a traitor of the forests

BY SAMUEL B. DETWILER

FOR countless years the stately pine and the little currant bush lived and thrived as friends and neighbors on the North American continent. The winds that blew over the currant bushes and gently combed the needles of the pine bore messages of good will and clean comradeship between the two. And then, scarcely two decades ago, something happened to embitter the little currant bush against its big, kindly neighbor, the pine, and enlisting the help of its cousin, the gooseberry, it forthwith allied itself against the pine, not openly and with a defiant flourish of its tiny branches, but silently, secretly, and insidiously, bent upon furthering a war of extermination.

From that day to this it has aggressively helped to extend its battle lines with such threatening and alarming effect that men have had to rush to the aid of the proud pine to save it from the little currant bush's guerrilla warfare. What happened was that some time during the nineties the American currant contracted a disease—a strange malady—which transformed it into one of the

bitterest enemies of our most worthy forest tree, the white pine. The disease was brought to it from a foreign source, probably Germany. An undesirable immigrant, secreted in nursery stock, was shipped into the country, and fastening itself upon the currant, as its natural ally, it began its deadly cycle of warfare. The common name of the disease is white-pine blister rust. It is caused by a parasitic fungus which is dependent upon currant and gooseberry bushes for an intermediate stage of its development.

The blister rust spreads from leaf to leaf and bush to bush on the currants and gooseberries throughout the growing season, and from late in June to November it generates a spore, harmless to the currant and gooseberry plants, but which, carried by the wind and lodging on the pine, produces blister-rust infection. These spores are extremely delicate and short-lived. Experiments indicate that they do not retain life longer than ten minutes after being liberated; and right here man seizes an advantage to control this insidious warfare, for under aver-



(New Hampshire Forestry Department)

ERADICATING THE INTERMEDIATE HOST

The people of New Hampshire value their white-pine forests so highly that they willingly deprive themselves of currant jelly and gooseberry jam. The wagon is loaded with 4,200 bushes of cultivated currants and gooseberries which residents of the town of Newmarket gave to the state as part of their contribution toward blister-rust control in their town. The town also appropriated money to employ state crews to eradicate the wild gooseberry and currant plants.



(Bureau of Plant Industry)

HOW THE CURRANT BUSH IS CARRYING ON A WAR OF EXTERMINATION AGAINST THE WHITE PINE

The Pines shown above were New Hampshire neighbors of some cultivated black currants, from which they became infected with blister rust and were eventually destroyed. When the currant plants were exterminated, no more pines became infected. Inset shows close-up view of the blister rust on a young pine near Vancouver, British Columbia. The broken blisters are filled with dust-like spores which spread the rust.

(Photograph by Humiston.)

age field conditions the destructive fire of the enemy from the currant to the pine ranges less than 900 feet.

There is, however, one exception: that of the cultivated black currant, which is highly susceptible to blister-rust infection and acts as a fort or center from which the disease spreads with great momentum. Cultivated black currant bushes are dangerous to white pine growing within a radius of a mile of them.

Once reaching the white pine tree, the fungus first attacks the needles of the young twigs. Every twig on the tree may be infected and die a few years later. If only a single twig is attacked, the disease grows back on

the branch from year to year until it girdles the trunk. In either case the rust kills the entire tree, regardless of its size. A diseased pine tree produces great quantities of dry pollen-like spores that can retain their generative power for several months and are easily carried long distances by the wind.

THE VICIOUS CYCLE OF DESTRUCTION

The peculiar and interesting thing about these spores is that they are harmless to other pine trees, but when they fall on currant or gooseberry plants they produce a rust on the lower surface of the leaf, and thus the cycle of warfare against the pine again begins.

The blister rust has spread throughout the important white-pine regions of the north-eastern states, is advancing in Pennsylvania and the Lake states, and recently has been found in the far West. Extensive surveys show that about 20 per cent of the white pine in northeastern New York and about 7 per cent of the white pine of Maine and New Hampshire are attacked by blister rust in areas where currant and gooseberry bushes are still present. Eradication of the disease is impossible, but it is practicable to apply local-control measures to protect individual white-pine

tracts, large or small, from the ravages of the rust.

Once a tree is attacked by this tiny warrior, it is too late to save it, except in the case of highly valuable ornamental pines, which justify the expense of locating and cutting out the infected branches. Spraying is not effective in preventing the rust in either currants or pines, and is impracticable in the woods. However, so far as cost and effort is concerned, the protection of a white-pine woodlot or plantation from blister-rust damage is less expensive and no more difficult than the control of the potato bug or apple scab. Local control of the blister rust has proved effective in the eastern United States wherever

cultivated black currants have been eliminated from the region and all other currant and gooseberry bushes, wild and cultivated, have been destroyed within 900 feet of the pine stands. The chief requirement is that the work be done systematically, at the right time, and according to simple rules.

In order to accomplish control on a large scale throughout the white-pine regions of the eastern United States, the Bureau of Plant Industry now has over forty blister-rust control agents headquartered with the county agricultural extension agents in counties where white pine is an important part of the farm woodlots. These agents visit the pine-owners, show them the disease, and explain the action necessary to protect the pine. They also carry on general educational work along this line through meetings and demonstrations, in co-operation with the agricultural extension agents. The plan of work in each county is formulated into a definite project. Pine-owners are encouraged to become local leaders in blister rust and forestry projects. The Federal blister-rust control program in the East has a definite time limit of eight years in which to secure protection of the pine lands in the co-operating states. It also provides that the money spent by the Bureau of Plant Industry in the maintenance of the blister-rust agents shall be met, dollar for dollar, by state funds used in assisting the pine-owners to do thorough and effective work in eradicating currants and gooseberries.

NOBODY LOVES THE CURRANT BUSH!

This work has the active support of the State and Federal agricultural extension services, and of the State Forestry Departments in each of the New England States, New York, Wisconsin, and Minnesota, under an agreement by which the state furnishes supervision of the control work done by the pine-owners. The state also uses its legal authority to remove currants and gooseberries from lands within the limits of control areas where educational means fail in accomplishing this. The control work is usually organized on a community basis, and land-owners who have currants but no pines seldom fail to co-operate with their neighbors, because the white pine is highly regarded as a community asset.

Some banks in New England require currants and gooseberry bushes to be destroyed within 900 feet of the

pine before money is loaned on farms having white-pine growth. The plan of using blister-rust educational extension agents has been productive of excellent results. The area cleared of currants and gooseberries was 22 per cent greater in 1922 than in 1921 and the cost per acre was less in 1922. The money spent by towns and individuals for control work increased from \$19,000 in 1921 to more than \$45,000 in 1922. During the past field season 472,887 acres in the eastern states have been cleared of these bushes at a cost of less than 20 cents per acre. The white pine growing on this area is safe from the blister rust for at least the next five to ten years. The wild currants and gooseberry bushes grow back slowly and sparsely on protected areas, but when they are again established the control areas must be reworked.

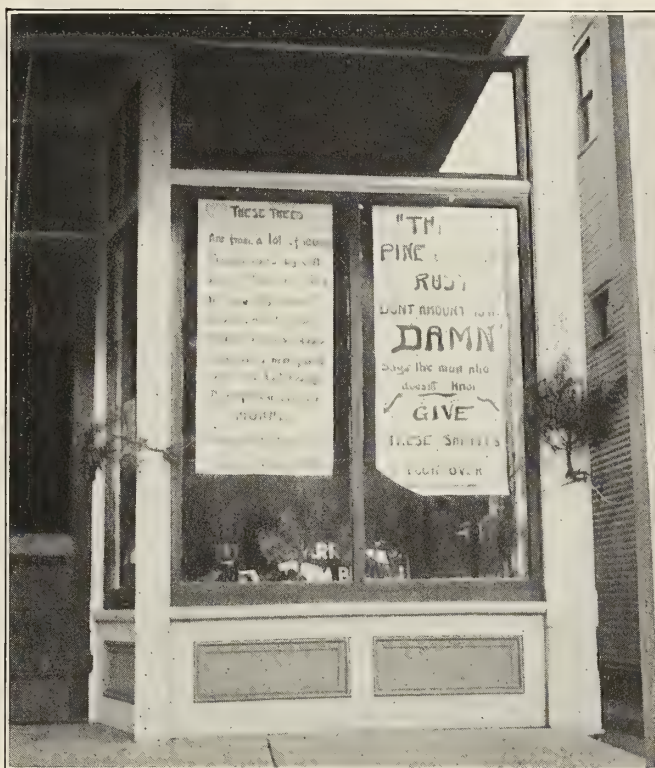
The present organization of co-operative white-pine blister-rust control work in the eastern United States is the first instance of agricultural extension methods applied on a large scale through local agents to a specific forestry problem. The success of agricultural extension methods is based on the interest of the farmer being converted into action through visual demonstration and local leadership. An important result of the work of these agents is an increased interest in better woodlot management on the part of the farmer-owner.

Practically every owner of white-pine growth appreciates its value and desires to protect it. Therefore the blister-rust agent meets with a ready

response. The emergency of the blister-rust situation requires the agent to concentrate his efforts on control of the disease, but the effect of his work is an increased public interest in general forestry. The demand from woodlot owners for specific information on woodlot management has led several county farm bureaus to consider the employment of county forestry extension agents.

THE OUTBREAK IN THE WEST

In the western United States white-pine blister rust likewise presents a serious problem. It was first found in British Columbia and western Washington in the autumn of 1921. In co-operation with the northwestern states and the Dominion of Canada, the Bureau of Plant Industry determined the extent of the rust outbreak in 1922. The blister rust was found to have been present on planted white pine in Vancouver, British Columbia, as early as



A GRAPHIC LESSON

The county agricultural agent of Warren County, New York, set pine-owners to thinking by means of this window display of blister-rust damage. The exhibit gave convincing evidence of the need for action and ended with "Moral: Eradicate gooseberries before planting pine."

1910. These trees were purchased in 1910 from a nursery in France and are probably responsible for the introduction of the rust. This French nursery also shipped white pines infected with blister rust into the eastern United States. At that time there were no quarantines in the United States and Canada to prohibit importation of white pines from abroad.

Assuming Vancouver as the center of spread, the present known distribution of the rust is north (on pines and

white pines growing close to infected currants are killed by innumerable blister-rust cankers on the twigs. For example, over 200 cankers were counted on only two branches of one heavily infected tree. In this way a tree is killed in much less time than where a single branch is attacked and the fungus grows back on the branch until it reaches and girdles the trunk. The western white pine is even more susceptible to blister-rust attack than the eastern white pine and conditions in the West favor an epidemic of great destructive force.

The fungus is permanently established in the West, but its spread can be delayed and controlled. A vigorous effort is being made to reduce losses from the rust to the minimum. It contemplates delaying the progress of the disease, protecting uninfected areas as long as this can be done at reasonable cost, and meanwhile developing and establishing the best methods of local control for commercially important white-pine areas.

The war against cultivated black currant is the most important part of the effort to delay the rapid spread of the disease. The State of Washington cleared out all cultivated black currant plants from 14 counties in the western part of the state. A total of 69,000 cultivated black currant bushes were destroyed in Washington, of which over 800 were reported as being infected with the blister rust. Oregon and Idaho have new laws permitting the destruction of cultivated black currants and are planning to use various means to accomplish this purpose. Plans are also being made in Montana to secure the elimination of these bushes from the western part of the state.

The western white pine of the Inland Empire and the sugar pine of California and Oregon are by far the most valuable timber trees in the regions where they grow. The present merchantable stand of these species is estimated at slightly more than 57 billion board feet, valued at approximately \$228,400,000. This timber is constantly increasing in value as eastern supplies are exhausted and is nearly three times the remaining stand of eastern white pine. In addition to the 8 million acres of old-growth timber, there are from 12 to 13 million acres bearing young growth in which western white pine or sugar pine should form permanently an important part of the stand.

White-pine blister rust is one of the many destructive pests from foreign shores that has come here to stay. It was brought here on white-pine seedlings imported from Europe and set out in several hundred forest plantations in the United States and Canada. Had the Federal and Dominion quarantines now in effect against importing nursery stock from foreign countries been in existence two or three decades earlier, they would almost certainly have prevented the introduction of the blister rust, chestnut blight, citrus canker, Japanese beetle, and other imported pests we now have to combat.



(Bureau of Plant Industry)

THE RESULT OF TOO-CLOSE ASSOCIATION WITH CURRANT BUSHES

This merchantable white pine tree, at Kittery Point, Maine, is dying from the attack of the blister rust. The disease entered the trunk from a branch, about twenty feet above the ground. The trunk is entirely girdled between the points indicated by the position of the man's hands.

currants) to the limits of white-pine growth; east (on pines and currants) to Revelstoke and Beaton, British Columbia, and south (on cultivated black currants) through western Washington to the Columbia River. The infection area lies within a triangle of country approximately 300 miles on a side. Beaton is about 100 miles north of Idaho, and white-pine growth is continuous from this point into the United States.

The blister rust has shown unprecedented severity of damage in western British Columbia. Large trees are killed as readily and rapidly as small ones. The western

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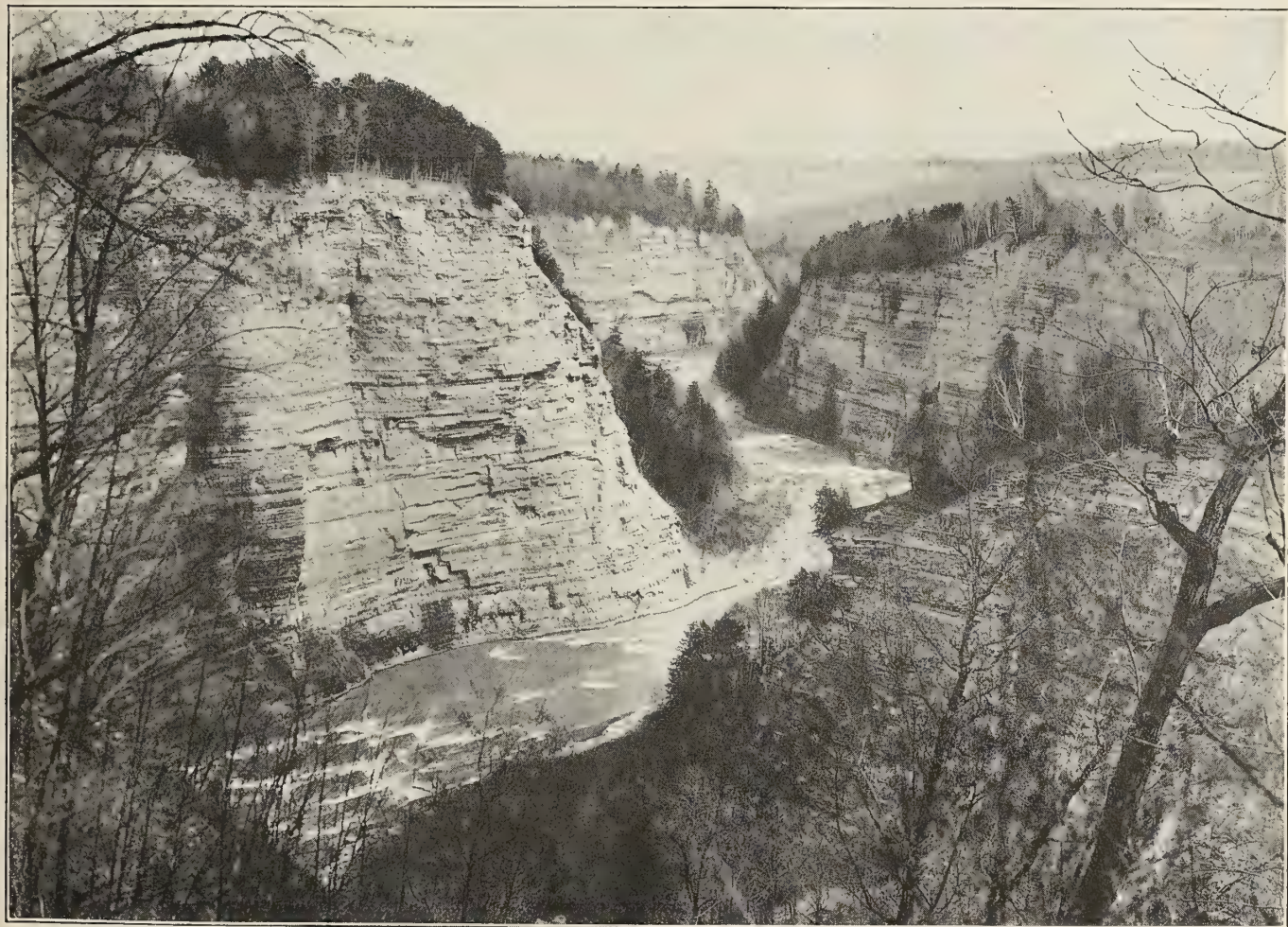
Vacation Trips in Central and Western New York

*By the Department of Forest Recreation, New York State
College of Forestry*

STARTING at Syracuse, this novelty trip of 220 miles, by motor and canoe, takes one to three of New York State's great water wonders: the first at Clark Reservation, the site of the first Niagara; the second at Letchworth Park and the gorge of the Genesee River; and finally to the most spectacular wonder of all—Niagara Falls.

First day.—This will be spent in a drive to the Clark Reservation, a recent state preserve, four miles southeast of Syracuse, and return. This reservation, covering 75 acres, incloses a lake one-quarter of a mile in diameter, surrounded by limestone cliffs 200 feet in height. This was the site of the first Niagara Falls, and the lake is the plunge-basin of a mighty cataract that poured over these cliffs. The magnitude of this first Niagara can be imagined by picturing falls as wide as those at present

and with equal volume or greater and two and a half times as high, or about 400 feet. Toward the close of the Glacial Period, when the great ice-sheet still covered Lake Ontario and the St. Lawrence Valley, the vast flood of waters pouring from it sought an outlet eastward down the Mohawk Valley to the Hudson. Here, at Green Lake, as the lake in the reservation is called, this great river plunged and crashed over these limestone cliffs into the valley below. At that time the cliffs were doubtless much higher than at present. After thousands of years it hollowed out this plunge basin to a depth not less than 400 feet below the edge of the cataract and probably greater. After the ice-sheet retreated northward, the liberated waters sought and found an outlet to the north, the present falls were born, and Green Lake became a deep lake surrounded by high, dry cliffs, as at present.



By courtesy of the New York State Conservation Commission

GENESEE GORGE

Serried cliffs uplift from the edge of the rushing river, their tops crowned by the greenery of forest trees. New York has wisely made this one of her great state reservations.



LOWER PORTAGE FALLS AT LETCHWORTH PARK

Rushing waters and tree-clad hills make a natural picture of great appeal. New York may well be proud of the scenic beauty within her state preserves.

Erosion has reduced the cliffs to their present height and partly filled up the plunge basin. Within this reservation are found over forty different varieties of ferns, more than on any equal area in the temperate zone. Flowers are also here in profusion, and many species of trees.

Second day.—Syracuse to Letchworth Park, 120 miles. This is a long run for one day, but the roads are excellent and it should be made without trouble. The region

traversed is the famous Finger Lake region, called by many the "Switzerland of America." These lakes in order, as we proceed westward from Syracuse, are Skaneateles (15 miles), Owasco (26 miles), Cayuga (40 miles), Seneca (52 miles), and Canandaigua (68 miles). Lying south of these, but off the main route, are Keuka and Conesus lakes; these lakes are made more interesting and beautiful by the many wild gorges which are cut into the steep banks. All are long, narrow, and very deep. The towns traversed are Skaneateles, Auburn, Seneca Falls, Geneva, Canandaigua, Aurora; then south to Mt. Morris and Portage, which is the southern end of Letchworth Park.

Third day.—This will be spent in an inspection of Letchworth Park. This park, comprising 1,000 acres, contains the wonderful gorge of the Genesee River, with the three Portage falls, totaling 290 feet in height. The Genesee River at Portage flows through a narrow gorge 250 feet in depth. Just below the high bridge of the Erie Railroad it plunges over the Upper Fall, 70 feet in height, into a deeper gorge. From here the gorge continues at about the same depth to the Middle Fall, where it again drops 107 feet in a sheer fall, resembling the American Fall of Niagara. Below this the walls are precipices 350 feet in height, while the banks slope upward at a steep incline for another hundred feet. Just below the falls are two great curving bays in the river caused by the swinging motion of the fall in its retrograde movement up the valley. A little farther on one comes to Cole Point, where Thomas Cole in 1841 painted the gorge for Governor Seward. From here one obtains a magnificent view back up the canyon to Portage Bridge. A short distance below this are the Lower Falls, a series of irregular cataracts totaling 70 feet in height. Just below them is the Flume, where the river is narrowed down between Table Rock and Cathedral Rock. The

THREE TRIPS IN NEW YORK

A CANOE TRAIL, AN AUTO
ROUTE AND A NOVELTY
TRIP THROUGH FORESTLANDS



former is a wedge-shaped rock extending out into the gorge. It is separated from Cathedral Rock by a narrow cleft, 64½ feet deep, the Flume, through which the water from the falls rushes in tumultuous rapids. Cathedral Rock is a conical mass of rock rising from the bottom of the gorge to a height several feet above Table Rock. Below the Lower Falls the river sweeps in a great semicircle to the left into High Banks gorge, through which it flows 14 miles to Mt. Morris. That portion of the river in the park is about three miles, extending from a point 3,300 feet south of Portage Bridge to a point 2,000

"The incomparable grandeur of Niagara depends on this wonderful manifestation of energy working only to produce the glory of movement, color, and intonation and existing in an environment of magnificent distances." The Niagara River above the Falls flows west, breaking into smaller cataracts just above the great plunge. Below the Falls it flows north through the picturesque and beautiful gorge, past the mysterious Whirlpool, and on into Lake Ontario. Goat Island divides the American from the Horseshoe Fall. The international boundary passes through the center of the Horseshoe Fall.



By courtesy of the New York State Conservation Commission

AN INDIAN PASS IN THE ADIRONDACKS

A world of wilderness outstretches before the hiker's gaze when he reaches this pass on the line of an ancient Indian highway—a tempting field of investigation.

feet north of the Lower Falls. It is one of the wildest canyons east of the Rockies and one of the most beautiful.

Fourth day.—Letchworth Park to Niagara Falls, 90 miles, via Warsaw, Varysburg, East Aurora, Buffalo, and Niagara Boulevard. This is one of the great dairy and fruit sections of the state and contains Buffalo, the state's second largest city, with a population of about 600,000.

Fifth day.—This will be spent at the Falls. Here, of course, is the supreme water-wonder of the state and of the East. The vast volume of water which plunges over the 160-foot precipice, amounting to 183,000 cubic feet per second, alone renders the Falls supreme in grandeur. F. C. Shenahon, in a report to Congress in 1914, said:

These Falls, famous all over the world, are at present of the following dimensions: American Fall—length, 1,035 feet; depth, 3 feet; height, 160 feet; Horseshoe Fall—length, 2,450 feet; depth, 10 feet; height, 160 feet. This makes a total length of crest of 3,485 feet, or 2/3 of a mile. The best views are obtained from the Canadian side, and to stand on the edge of the Horseshoe Fall and look across its 2,500 feet of curling emerald crest above and robe of pure white below is to see one of the grandest and most inspiring sights that this old earth affords.

This completes the trip, one that can easily be made over good roads, and it is one that competes successfully

with any trip of equal length in all America for scenic grandeur and natural beauty.

In Your Car Through the Adirondacks

A 500-mile auto trip through the Adirondacks of New York State, in which the tourist touches nearly every point of interest and scenic attractiveness, is now possible in six days, without fatigue, on the splendid highways which wind through this scenic region.

First day.—Albany to Lake George, 68 miles, via Troy, Mechanicsville, Saratoga Springs, with the famous mineral springs, where the State Conservation Commission maintains a 600-acre reservation. Side trip up Lake George, "The Queen of Mountain Lakes," by boat to Ticonderoga or by auto to Bolton Landing (10 miles).

Second day.—Lake George to Saranac Lake, 100 miles, via Chestertown, Pottersville, Schroon Lake, Elizabethtown, Keene, and Lake Placid. This run takes one up through the eastern Adirondacks, past beautiful Schroon Lake and Schroon River, through Elizabethtown, over Hurricane Pass, into Keene Valley, on the eastern side of Mt. Marcy (5,344 feet above sea-level), the highest peak in the state, and thence to fashionable and beautiful Lake Placid, watched over by Whiteface (4,372 feet), and finally to famous Saranac Lake, the resort center of the mountain region.

Third day.—Saranac Lake to Colton, 77 miles, via Saranac Inn, Lake Clear, past the St. Regis Lakes, Paul Smith's, Meachem Lake, St. Regis Falls; thence west over the St. Regis River to the Racquette River and Potsdam; thence south along the Racquette to Colton. This takes one into the northern Adirondacks, reaching "farthest north" at Potsdam, only 18 miles from Canada. It also covers the eastern portion of the lake region of the mountains.

Fourth day.—Colton to Long Lake, 65 miles. Up the Racquette River to Tupper Lake; thence along Big Tupper to Little Tupper; thence east, over a dirt road, to Long Lake. This takes one through the western portion of the Lake Region, past innumerable lakes and ponds. Long Lake, our destination, is really a widening of the Racquette River, about 15 miles long and a mile wide at the widest place.

Fifth day.—Long Lake to Albany, via Indian Lake, Johnstown, and Fonda, 130 miles. This last lap of the journey is down the famous and beautiful Mohawk Valley, over a perfect motor road, and one should arrive in Albany in ample time for dinner at night. This schedule should be easily made by any automobile without running over nine hours a day.



By courtesy of the New York State Conservation Commission

INDIAN LAKE

Only a few short miles from the throbbing city one may strike lines of travel used today as they were in the Colonial times. New York's mountain lakes invite multitudes to seek recreation there in canoe travel.

By Canoe Through the Adirondacks

An ideal canoe trip through the Adirondacks has been outlined by the New York Conservation Commission. The trip starts at Old Forge, 58 miles north of Utica, New York, and continues northeasterly 90 miles to Loon

fourth mile, paddle one-half mile, carry one-half mile, and put in on the southern tip of Long Lake. A side trip is possible to West Mountain (2,919 feet) and to Blue Mountain Lake by paddling up the Marion River for six miles to the carry (three-fourths mile); thence through Utowana and Eagle lakes to Blue Mountain



NIAGARA

This world-renowned water spectacle is the climax of a novel trip through scenic New York. The trip starts with the site of the original Niagara, many miles from its present location, and ends with the existing reality of the mighty sweep of the monarch of waterfalls.

Lake. It may be divided into six stages, as follows: Fulton Chain Section, Racquette Lake Section, Long Lake Section, Tupper Lake Section, Saranac Lake Section, and Paul Smiths Section.

Fulton Chain Section.—Starting from Old Forge, you paddle upstream one and one-half miles to First Lake, across this to Second and Third, which are connected by narrows, but are all really one lake. A narrow, winding stream leads into Fourth Lake, which is five and one-half miles long. A narrow inlet leads into Fifth Lake, which is a small pond. Here is the first carry, one-half mile, into Sixth Lake, and thence into Seventh. The carry from Seventh into Eighth is one mile long, with a good trail. Eighth Lake is about one and one-half miles long, and from the upper end of it you carry one and one-half miles across the low divide between the Moose and Racquette rivers and put in at Brown's Tract Inlet on Racquette Lake. A side trip may be made to Rondaxe Mountain Fire Tower (2,300 feet elevation).

Racquette Lake Section.—The route leads northerly across Racquette Lake for six and one-half miles; thence by carry one-half mile into Forked Lake. The latter is three and one-fourth miles long. When you reach the outlet, the Racquette River, a carry of one and one-half miles is necessary to avoid rapids in the stream. Then you put in for a mile, to Buttermilk Falls, carry one-

Lake. From here one can climb Blue Mountain (3,750 feet) to the observation tower.

Long Lake Section.—Long Lake is 15 miles long, and at the northern end you again enter the Racquette River. Five and three-fourths miles below Long Lake you come to Racquette Falls and the one and one-fourth-mile carry around them; then you can paddle five and one-half miles to Axton. Side trips are possible to Owl's Head Mountain (2,780 feet), Kempshall Mountain (3,360 feet), and to Hendrick's Spring, which is on the divide between the watersheds of the St. Lawrence and Hudson rivers.

Tupper Lake Section.—The main route divides at Axton. To go to Tupper Lake, you continue down the Racquette River 13 miles to the head of Big Tupper Lake, whence you can paddle to Tupper Lake village and the railroad. Here this stage of the trip ends, unless you intend to paddle down the Racquette to the St. Lawrence, a distance of about 40 miles. There are numerous falls and rapids in the Lower Racquette. A side trip to the foot of Tupper Lake (six miles) is possible and also one to the top of Mount Morris (3,163 feet).

Saranac Lake Section.—To continue with the other main route, you leave the Racquette at Axton and carry two and one-half miles over "Indian Carry" to Upper

Saranac Lake. You then paddle seven and one-half miles to Saranac Inn. To go to Saranac Lake village, you leave Upper Lake about a mile from where you put in and follow the eastern inlet one mile to Bartlett Carry (one-half mile), and thence through Middle and Lower Saranac lakes to the village. Side trips are possible to Mount Ampersand (3,365 feet), and by canoe through the numerous small lakes and ponds lying north of Upper Saranac Lake, about 20 in number. Railroad connections can be made at Saranac Inn and Saranac Lake.

Paul Smiths Section.—The main route continues from Saranac Inn over the route of the Seven Carries. From the inn you carry one and one-half miles to Little Green Pond, paddle one-half mile across it, carry one-eighth mile to Little Clear Pond, paddle across it, carry three-eighths mile to St. Regis pond, follow east shoreline a short distance, carry one-eighth mile to Green Pond, paddle one-fourth mile across it, carry one-fourth mile into Little Long Pond, paddle northeast for one mile, carry one-eighth mile into Bean Pond, paddle one-fourth

mile across it, carry one-fourth mile into Upper St. Regis Lake. From here you paddle three and one-half miles through this lake, Spitfire Lake, and Lower St. Regis Lake to Paul Smiths; then you carry one mile to Osgood Pond, paddle across it and up the outlet to Lake Lucretia, cross the latter, carry one mile into Rainbow Lake, paddle three miles over it; thence down the Saranac River to Lake Kushaqua and Mud Lake; carry one and three-fourths miles to Loon Lake and your journey's end. Railroad connections are made here with the New York Central and the Delaware and Hudson railroads.

The whole region traversed by this trip is for the most part heavily wooded, often with virgin forests; is watched over by the high peaks of the Adirondacks; abounds in fish and game, and is as untouched, or nearly so, as when it served as the waterway for the Indians and trappers of long ago.

Camping facilities are afforded by the state lands on the shores of most of the lakes and streams traversed. It is an ideal week's trip for a canoe.

National Conservation Association is Merged with American Forestry Association

AT a meeting of the Board of Directors of the American Forestry Association held on April 24 the proposal of the National Conservation Association that it consolidate with and become a part of the American Forestry Association was approved. The consolidation became effective on June 1, at which time the members of the National Conservation Association automatically became members of the American Forestry Association, receiving all privileges of subscribing membership.

"The National Conservation Association was organized at the time when the integrity of the system of national forests and the whole conservation movement was in serious jeopardy," said Colonel Graves, President of the American Forestry Association, in announcing the consolidation to the press. "It was a powerful force in sustaining what had already been achieved, and it has played an outstanding rôle in forwarding national conservation during the last twelve years. The association had great influence in the development of Federal water-power policies, in the legislation governing the use of coal, oil, and phosphate deposits on the public domain, and various other features of policy relating to natural resources. The country is deeply indebted to Mr. Gifford Pinchot, Mr.

Harry Slattery, and other officers of the Association for the public service and achievements provided by the Association.

"Most of the problems of conservation are today within the field of the American Forestry Association, which seeks to make our forests and related natural resources of the highest possible service in building up the country and in safeguarding the interests of the public. The protection and right use of our forests, the provision for a continued supply of forest products, the development of the recreational service of the forests, the building up of public forests and parks, the protection and intelligent handling of wild life and fisheries, the use and reclamation of forest lands, are all functions of the American Forestry Association, as they have been of the National Conservation Association.

"The American Forestry Association welcomes the consolidation with the National Conservation Association. It will forward the conservation movement with vigor and fearlessness, and I hope that in this great work it may have the continued support of all members of the Conservation Association and of all friends of conservation throughout the country."

New Booklet on Trees

In response to many requests for a booklet describing the more common trees of the District, the American Forestry Association has published a booklet entitled "Forest Trees of the District of Columbia, How to Know Them, Where to See Them." It is pocket size, 5" x 9". Each of the 64 pages gives the distinguishing character-

istics and location in the District of one or more common trees. The leaves and fruit of each tree are appropriately illustrated. The booklet is having a good sale at the leading bookstores and hotels in the District. Price is 25 cents per copy. If ordered by mail, 5 cents should be added for postage and handling.

White Birch Chosen to Honor Mothers

THE white birch has been chosen as "Mothers' Tree," and on Sunday afternoon, May 13, Mothers' Day, the initial tree was planted on the shore of Lake Antietam, marking its dedication.

Strangely enough, the world has planted trees to heroes, to causes won and lost, but no trees to mothers. The white birch was selected because its dignity and beauty,



PLANTING THE FIRST "MOTHERS' TREE"

On the shore of Lake Antietam, at Reading, Pennsylvania, on the afternoon of Sunday, May 13, "Mothers' Day," the white birch was dedicated and planted with appropriate ceremonies.

the sheltering, caressing manner of its growth, and its whiteness seem to typify the mother qualities, to be emblematic of that love which hovers over our cradles and guards us through the storms of life—never failing, sublime. And it is a tree, as well, which will grow almost anywhere, if transplanted with care and at the proper time.

The thought and hope is to nationalize the custom of planting this particular tree, at all times and in all places, by individuals as well as by organizations, to honor the mothers of the nation. The American Forestry Association has endorsed it as a national custom, to the end that

thousands of beautiful white birch trees may stand, before many years, as lasting tributes to motherhood.

In using the term "white birch" the particular variety is left to individual choice, but the preferred species for general planting as Mothers' Tree is the European form—*Betula laciniata*—the Weeping White Birch, as it is called, because of its drooping branches. If, however, a Paper Birch is preferred—*Betula papyrifera*—it can be planted with success in the northern tier of states, almost from ocean to ocean, extending into New York, Pennsylvania, Illinois, and Nebraska, and northward almost to the Arctic Ocean. In fact, few trees of this country have a more extensive range than white birch and the beauty of the individual tree is too well known to need further comment.

The sentiment was crystallized by and the initial planting done under the auspices of Mr. Solan L. Parkes, of Reading, Pennsylvania, and the spade with which this first "Mothers' Tree" was planted is to be properly inscribed and presented to the American Forestry Association.

Mrs. Harding, who is a Vice-President of the Association, wrote a cordial letter of endorsement, a copy of which is reproduced herewith, when the plan was brought to her attention.

THE WHITE HOUSE
WASHINGTON

May 11, 1923.

My dear Mr. Butler:

It is a pleasure to endorse every appropriate program which looks to extending the custom of planting and, beyond that, of properly caring for the beautiful trees with which our continent has been so richly endowed. There is urgent need for giving this encouragement in all possible ways; and every occasion which can be made justification for putting out more trees, especially under such auspices as will give them special insurance of the care and attention they need, is deserving of all commendation.

Most cordially yours,

Mr. Ovid M. Butler,
Editor, American Forestry,
914 - 14th Street,
Washington, D. C.

Frances King Harding

The American Forestry Association urges the planting of Mothers' Trees not only on Mothers' Day, but on all days, and asks its members and all readers of AMERICAN FORESTRY to help nationalize this beautiful custom.





Planting Evergreens on the Home Grounds

BY WINFIELD A. KIMBALL

JUST as soon as the frost is out of the ground conditions are at their best for transplanting conifers about the home grounds or for reforesting open areas. The nurseries are busy at this time preparing shipments of trees for this purpose, and usually a better selection can be obtained early in the season. One can of course plant during the latter part of July and through to September, but if one waits until the latter month it is necessary to watch weather conditions more closely. If the season has been extremely dry or unusually wet, it is not advisable to attempt fall

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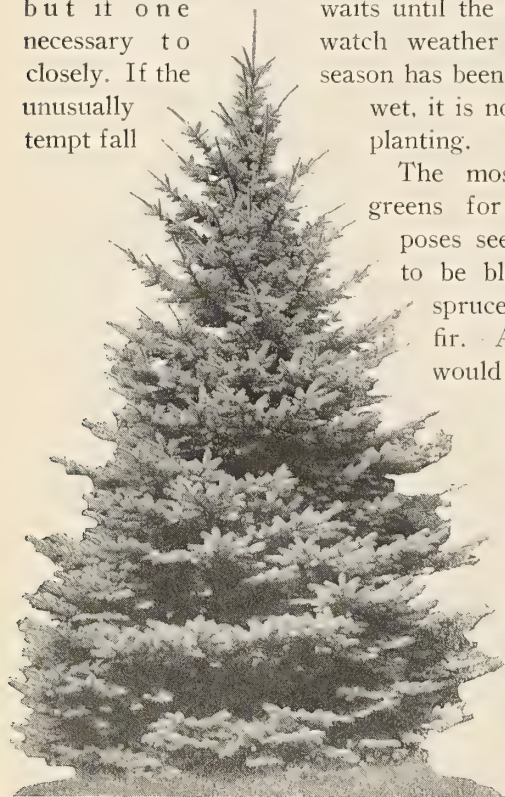
The most popular evergreens for decorative purposes seem, of late years, to be blue spruce, white spruce, and concolor fir. A second choice would be white pine or hemlock. Often very beautiful effects are obtained by planting mixed groups, with occasional single trees near by.

Assuming that you are interested in getting seedlings or transplants for planting, a few

depending upon the size of the trees, and placing them in the trench at an angle of forty degrees, with the tops facing the sun. The trees will keep better if they are spread through the trench rather thinly and covered with moist earth up to within two or three inches of the top. It is well to water the trees lightly at this time. Trees prepared in this way will keep for several days.

When you are ready to transplant the trees it is advisable to keep them in a pail with the roots submerged in a puddle of thick mud until you are ready to place them in the ground. It is important to keep the roots moist, for young trees will die if the roots get dry, even for a short time.

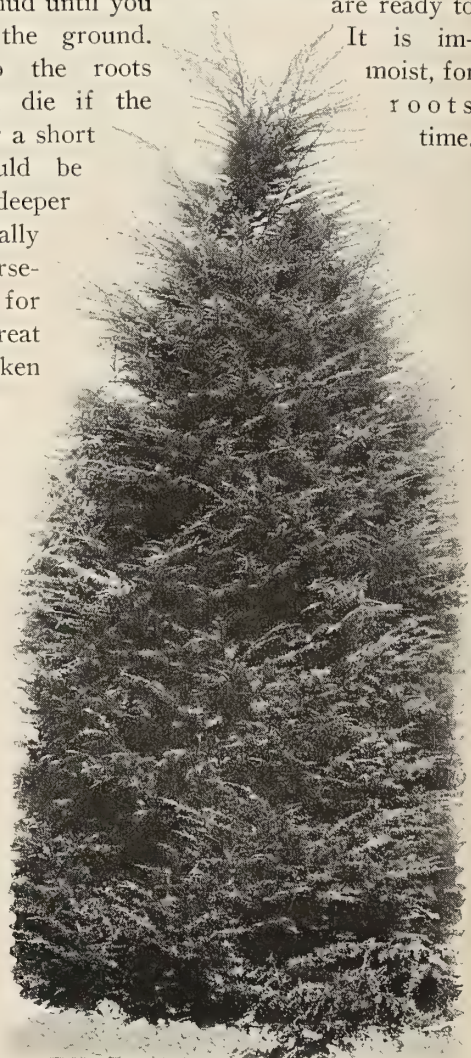
The trees should be planted a little deeper than they originally stood in the nurseries, to allow for settling, and great care should be taken to plant them firmly in the ground. They cannot be planted too firmly. In planting small tracts two persons can work to advantage. One goes ahead, making holes with the "grubbing hoe," while the other follows and plants. For commercial purposes, where there is a market for Christmas trees, it might be ad-



COLORADO BLUE SPRUCE

points are given as to the care of them after arrival. Most nurseries are quite careful to prepare trees for shipment so that you will receive them in excellent condition, and the care you give them upon arrival will determine, in a large measure, the successful growth of your trees later.

The trees should be taken out of the boxes in which they are shipped as soon as possible after arrival, the bundles untied, and the trees "heeled-in." This is done by digging a shallow trench from five to six inches deep,



THE BEAUTIFUL HEMLOCK

visible to plant spruce or fir among pine. If the pine are planted six feet apart, the spruce and fir can be planted between, at a distance of three feet from the pine. In six or seven years the spruce and fir can be cut out and sold for Christmas trees. The income derived from the sale of the trees will cover the total cost of all the planting and will also cover the interest on the money invested. You still have your pine standing at about the

right distance apart for future growth. There is a good market for Norway spruce for Christmas trees, and as they grow about as fast as pine, this species might be desirable for this purpose.

Planting solely for timber, it is best to have the trees placed about six feet apart. If they are planted at greater distances apart they are apt to become "limby" and make poor timber.

Silver Elms Mark Massachusetts Dedication at Lincoln Memorial

Bay State Plants Forty Elms Bordering "Massachusetts Avenue of Memorial Trees" at the Lincoln Shrine

UNDER the auspices of the Massachusetts Society of Washington, D. C., a distinguished gathering assembled at the Lincoln Memorial Shrine on May 4, 1923, to plant and dedicate forty trees to the

martyred President whose noble life has ever been an incentive to those who strive for better things—Abraham Lincoln.

In this party were such prominent men as Senator



THE BAY STATE PLANTING AT THE LINCOLN MEMORIAL

Tenschert & Flach

Henry Cabot Lodge, Lieutenant-Governor Alvan F. Fuller, of Massachusetts; Congressman Frederick Dalinger, Congressman John Jacob Rogers, Mayor James P. Curley, of Boston, and thirty-eight other mayors of Massachusetts, who came to do honor to their country, their state, their city, and to the man whose name stirs the heart of every patriot.

A tree was planted in the name of the State of Massachusetts by Lieutenant-Governor Fuller and each mayor planted a tree in the name of his city. The forty trees, silver elms, will form the avenue running southeast of the Memorial to the reflecting pool, and it will be known as the "Massachusetts Avenue of Memorial Trees."

Because of her prestige as the mother state of the Union, Massachusetts was allowed to plant the greatest number of trees, and she also enjoys the distinction of leading off with tree-planting exercises at the Memorial.

Other state societies in Washington will arrange tree-planting exercises from time to time until the different avenues and approaches to the Memorial are taken care of in this manner. The idea originated in Mrs. Harding's suggestion of beautifying the grounds in this way.

George L. Cain, Vice-President of the Massachusetts Society of Washington, saw in this movement a splendid opportunity of historical note for his state and his society and arranged a three-day program in honor of the event, to which he invited the Governor and thirty-nine mayors of Massachusetts, in the name of the Massachusetts Society.

The exercises at the Lincoln Memorial were dignified and impressive and men of note paid due respect and homage to the martyred President. In tributes of eloquent speech they epitomized Lincoln, the most human of our national figures.

Disabled Veterans Plant Memorial Tree at Arlington

One of the most simple yet impressive ceremonies in the annals of the national cemetery at Arlington, Virginia, was the dedication of an American Elm in the shadow of the Unknown Soldier's grave on Memorial Day under the auspices of the Disabled American Veterans of the World War. The elm, which will stand as a silent token of reverence for the tens of thousands buried on the beautiful hill overlooking the national capital, was contributed by the American Forestry Association, through the courtesy of the Amawalk Nurseries of New York.

All three branches of the national defense participated in the simple service. Following a prayer by a naval chaplain, an army squad fired the salute, and Mrs. Harding wife of the President, then dedicated the tree to the World War dead. Taps sounded by a marine bugler ended the service.

The idea was conceived by the men who bear the scars of service and the American Forestry Association participated by offering the elm that will stand for generations over the remains of the men who fell in action overseas.

Colonel Greeley Receives Distinguished Service Medal

In recognition of his exceptionally meritorious and distinguished services during the World War, Colonel William B. Greeley, Chief of the United States Forest Service, received the Distinguished Service Medal from the War Department on April 25. Colonel Greeley, who was with the forest engineers in France from August, 1917, to July, 1919, also received the Legion of Honor medal from the French Government and the Distinguished Service Order from Great Britain.

The citation accompanying the conferring of the Distinguished Service Medal mentioned Colonel Greeley's long service with the American forces in France, where from June, 1918, to July, 1919, he supervised the operations of all forestry troops in France.

E. A. Sherman, Associate Forester of the United States, called attention to the fact that by a singular coincidence Colonel Greeley received his decoration from the War Department during the week of April 22-27, Forest Protection Week.

"It is more than fitting that Colonel Greeley's services to his country in war times should be emphasized through the bestowal of the Distinguished Service Medal during Forest Protection Week, in the success of which he is so deeply interested. I am sure that but few men, if any, have done more to advance forestry in this country than Colonel Greeley, who as head of the Forest Service is no less fighting for his country in fighting for conservation of our forests than he was in those stirring days of 1917 and 1918."

Flowering Trees and Shrubs of the Lower Rio Grande

BY KATE PEEL ANDERSON

THE character of the vegetation of that section of the United States called the Lower Rio Grande Valley, "where the green plants of earth spring forth in wild luxuriance," is distinctive enough and lovely enough to deserve a more general recognition that it now enjoys.

It is subtropic and practically all of it belongs to the Acacias and the suborder Mimosæ, although there are a few specimens belonging to neither and said to be found nowhere else in the world save in the northeast portion of Mexico, contiguous to our own border.

For some reason or other, both the Mimosas and Acacias, for me, spell *romance*; and whoever knows the chaste delicacy of the Mimosa, "weak with nice sense," as the elder Darwin sang, can easily imagine the tender charm of this luxuriant subtropic region, with its myriad of blossoming things belonging to this alluring family. Numerous indeed are its members, for, according to botanists, it is said to embrace six tribes, twenty-nine genera, and about thirteen hundred and fifty species, the greatest number of which are found only in the tropics. Enough, however, are native to the Rio Grande Valley to quite overwhelm the amateur who would classify them.

The Acacias, Mimosas, and Cæsalpinas, of which there are a number, are so closely allied that a mistake in their classification by the layman is quite pardonable.

Perhaps the most striking and distinctive of all the trees of this section, however, belongs to none of these groups and is one of those peculiar to this region alone. It is the lovely, ever-blooming, broad-leaved Anacahuita (*Cordia boissieri*). This tree not only seems to blossom every day in the year after reaching maturity, but is practically born abloom, as I have seen a tiny shrub of two or three feet high topped with a brave white blossom which seemed saucily to call out to one, "Good morning; have you blossomed today?"

In every part, the Anacahuita is interesting. The trunk is itself unique—rough, hoary, and gnarled; as if starting life well fortified against the pricks of fortune. The leaf is broad, rather thick and somewhat rough, and the blossom a creamy, crinkled thing of beauty. Mingling with the flowers, and quite as charming as they, are big clusters of the fruit inclosed in an outer shell. When the shell drops away, the pale greenish-yellow fruit is disclosed. About the size of an olive (the tree is sometimes called the wild olive), it is sweet and insipid to the taste,

but contains some property that is valuable medicinally. The Mexicans make a very efficacious cough medicine of it.

Closely akin to the Anacahuita, both in name and habits, is the Anacua (*Ehretia elliptica*). This big sister of the Anacahuita does its best to keep pace in the blooming and fruiting business, but succeeds in producing only twice yearly, when it is a veritable snow-bank of tiny, fragrant blossoms, growing in lacy sprays along the entire length of the branch and followed by a mass of rich berries varying in color from green to orange and brown. It is impossible to pass so lovely a thing, either in fruit or blossoming season, without stopping before it in admiration.

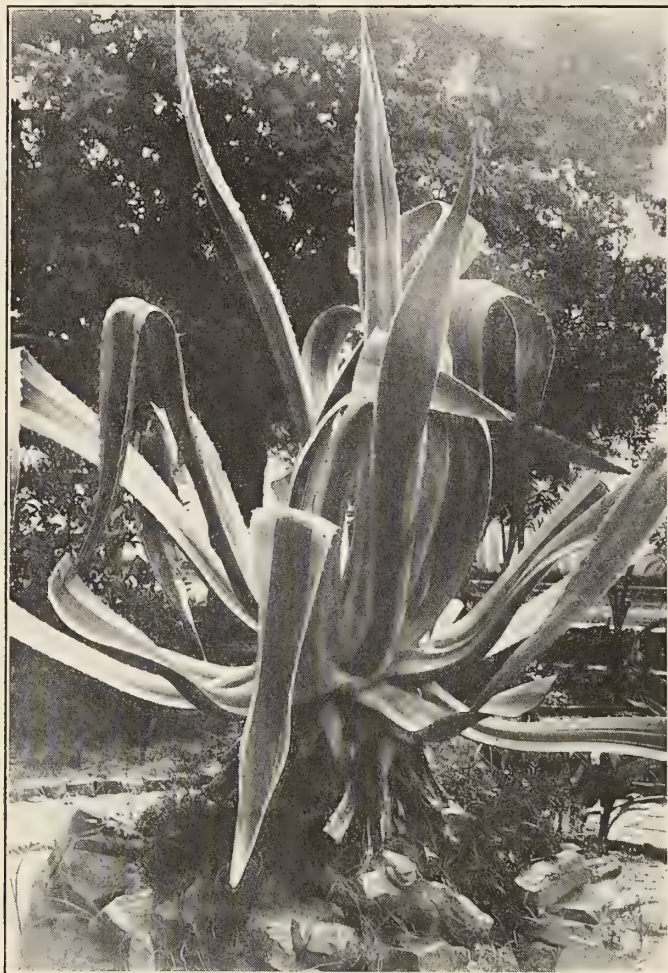
The largest and most beautiful in foliage belong-

ing to the Mimosa group is the evergreen Tepeguaje, the delicate bipinnate leaves of which are so sensitive to the touch that the passing of a cloud over the sun, it is said, is enough to change the position of the leaflets. In the spring it is covered with small yellow blossoms of a faint fragrance, and lovely indeed, then, are its drooping, feathery branches, as they bend and sway to every passing breeze. One loves the Tepeguaje.

Another almost perpetual bloomer is the exquisite Retama (*Parkinsonia aculeata*), or Spanish broom. This, too, is a large-spreading tree of most dainty foliage, an open crown and zigzag, thorny branches clothed with a



The yellowish-white blossoms of the Ebony, handsomest of the acacias, grow in profuse, downy clusters during June and July.



A variety of Maguey with distinctively striped leaves. This plant is a prolific grower, though it does not reach its greatest perfection in the Rio Grande region.

green bark. The long, exceedingly narrow leaves are pinnate and are even lighter and more feathery than those of the Tepeguaje. The drooping, plume-like branches are covered with delicate yellow blossoms touched with pink, and when the tree is in full bloom it is difficult to restrain oneself from saying, "This is the most beautiful thing in the Rio Grande Valley."

The Huisatche (*Vachellia*), belonging to the Acacias, has a much wider range than any of the others mentioned, but is also one of rare beauty. The foliage is dainty and of a most charming texture and blue-green color, looking always as if clothed in mist. The blossoms, much used by the French in perfumes, who cultivate the trees for this purpose, are small and yellow. The tree itself is so fragilely lovely that it scarcely needs a blossom to enhance its beauty.

The handsomest of all the Acacias (so many crowd one for first place) is the strong, straight-trunked ebony, with its stiff, flowing foliage standing out so brilliantly among its fellows. I cannot, in fact, recall a lovelier sight than a group of this species, with their light trunks and dark, glossy, rich foliage, looking much like fine old orange trees. Their yellowish-white blossoms grow in downy clusters and are most profuse during June and July.

The better-known Mesquite (*Prosopis glandulosa*) is

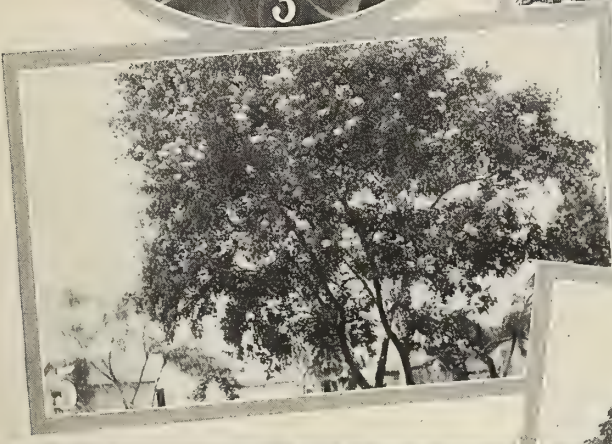
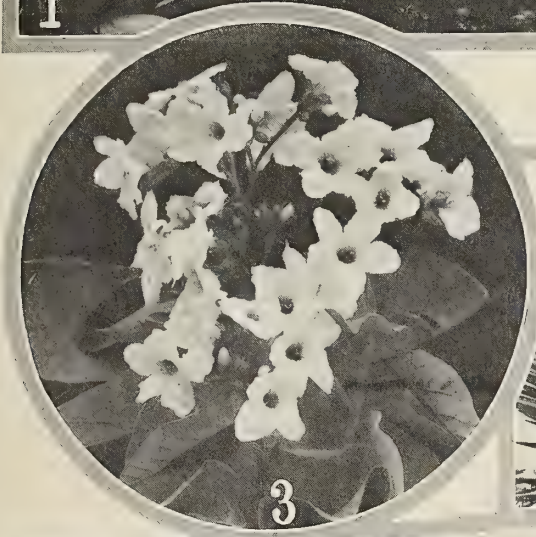
not unlike the ebony in general appearance, though of a more drooping and not so brilliant foliage. It is an invaluable tree for arid countries, has a hard, brown wood taking a high polish, and it is also extensively used for paving blocks, fuel, etc. The blossom is quite like that of the ebony, but has in addition a long, heavy bean-pod, which when ripe is sweet and nutritious, making a valuable food for man and beast. The versatile Mexican also manages to make a fermented beverage of it. The tree is rich in tannin and yields a gum used in confectionery, as well as a large quantity of honey. Aside from its utilitarian qualities, the Mesquite, with its large spreading branches, is among the handsomest of trees.

The Tenaza in bloom! How can I make those unacquainted with it see it laden with its gossamer balls of ethereal beauty! To come upon it suddenly, as I did, a stranger to its existence, is to be able to understand the transport of gratitude that caused Linnæus to fall on his knees at his first sight of the furze and thank God for thus beautifying the earth.

The foliage and general appearance of the Tenaza does not differ greatly from the other Acacias, but somehow it is more spiritually, more evanescently, beautiful. Because of a vicious little curved thorn which one would not sus-



*The Maguey (*Agave Americana*), commonly called the Century Plant because of slow growth; one of the most beautiful and distinctive of the native plants of the Rio Grande and "the miracle of nature" to the Aztecs.*



TYPICAL FLOWERING TREES AND SHRUBS

1. Agaves adapted for hedge use around a small ranch. 2. Anacua in full bloom. This tree blossoms in a night, covering itself with exquisitely dainty white flowers. 3. Detail of the crinkled, creamy blossoms of the Anacahuita. 4. The "majestic lily of the tropics" (*Yucca aloifolia*), bearing at the top of its great flower-stalk a gigantic cluster of pendent, creamy-yellow blossoms. The plant is called by the Mexicans "Lluvia de Oro," Shower of Gold. 5. The Tenaza, a tree of beauty in the perfection of bloom. 6. The strong Ebony, looking somewhat like a fine old orange tree. 7. The evergreen Tepeguaje, largest and most beautiful of the Mimosa group.



Tendrils of the beautiful, though non-fragrant white violet vine.

Exquisitely dainty coral blossoms of Coronado de la Reina.

Tenaza in bloom—gossamer balls of ethereal beauty.

pect so lovely a thing of harboring, the Mexicans call the tree the *Uña de Gato* (cat's claw).

Among the smaller blooming trees that do their bit toward keeping this country beautiful at all times of the year is the Desert Willow (*Chilopsis saligna*). It is of the graceful, drooping willow type, with blossoms of

four color varieties—white, pink, yellow, and purple.

Quite the most interesting of the tree-shrubs, though lacking somewhat in the charm of the others, is the curious Corallilio. A handsome, glossy heart-leaved thing, it blossoms laboriously, it seems, in long coral spikes which never quite succeed in fully opening. The leaves fall late in the



June-blooming flowers of Acacia Arabica, called "Flowers of St. John."

Cæsalpina Pulcherrima, or Bird of Paradise, flaming forth in brilliant colors.

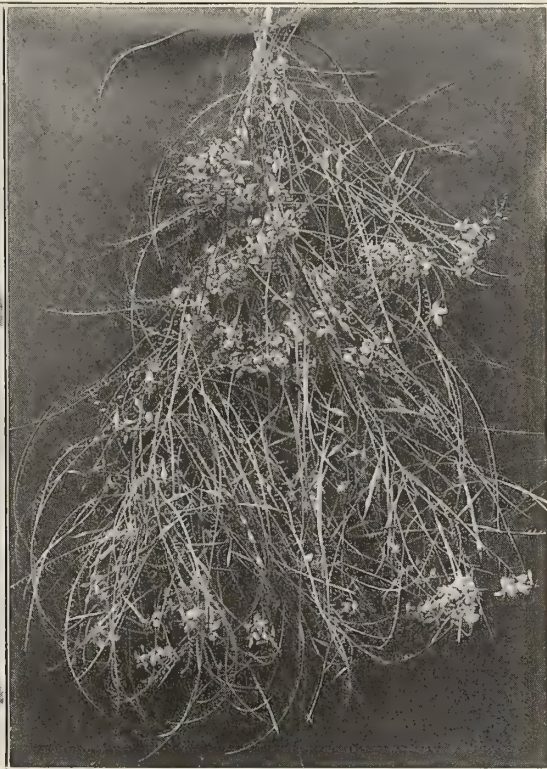
Gowned in royal purple is the beautiful Alhucema, with its soft, sage-green foliage.



The rich berries of the Anacua, varying in color from green to orange and brown.



Corallilio, with glossy, heart-like leaves and long, coral spikes of bloom.



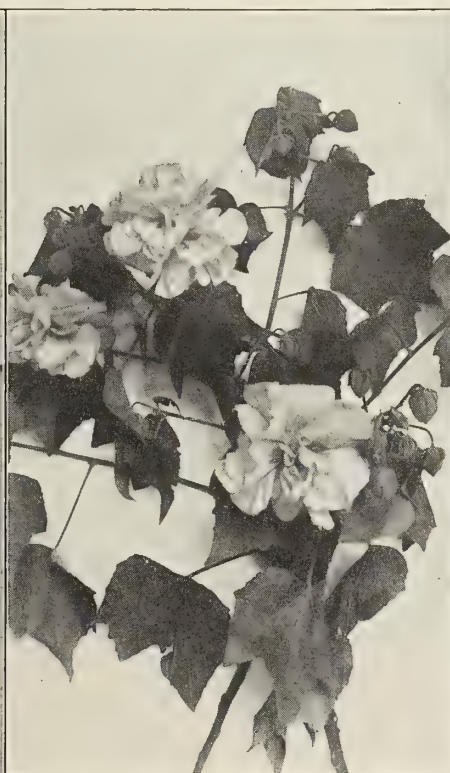
Drooping, plume-like branches of Retama, covered with delicate yellow blossoms.

year, and the blossoms, with their little snake-like bodies, appear first on the gaunt branches, presenting rather a sinister appearance. The Corallilio gets its name, I fancy, from the venomous little tropical snake of the same name; or perhaps it's the other way around. At any rate, the shrub is said to be as poisonous as the snake.

If one is somewhat depressed by the sight of the self-repressed Corallilio, one has only to glance at the saucy insouciant Esperanza, which seems omnipresent in this country and which hails one unceremoniously with a gay "Cheer up; I'm here—and my name is Hope!" Looking into its gladsome face, surely the most despondent could



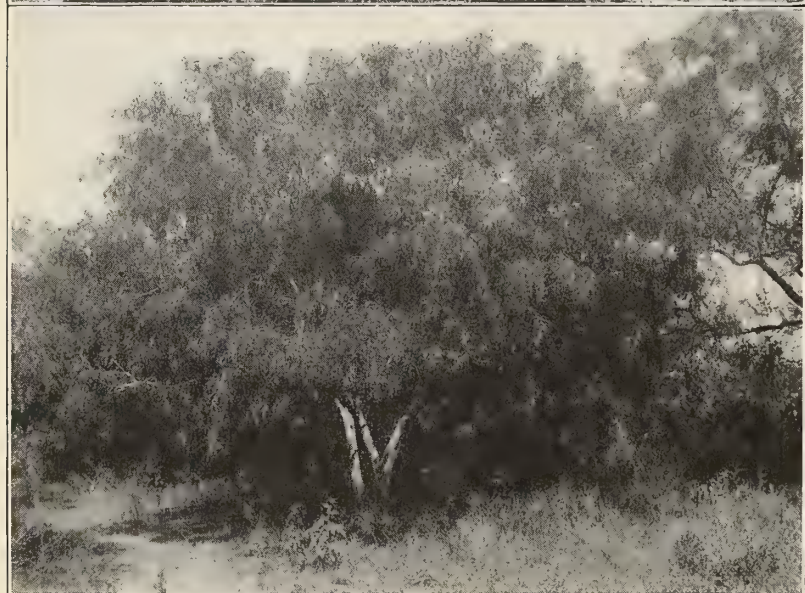
The strange, spotted blossom of the charming Duck Vine, or Aristolochia.



The flower of the beautiful blooming shrub called "Friendship of the Day."



Barra de San Jose, with distinctive foliage and flowers partly in bloom.



hardly refuse the invitation to be of good hope. With a glossy evergreen foliage and large clear yellow, tubular blossoms, which are seldom absent, the Esperanza is well worthy of its cognomen.

Born in the purple is the beautiful Alhucema, a large spreading shrub which reigns throughout the months of May and June in truly regal splendor. Its foliage, of a lovely soft sage-green, has the same aromatic qualities as the sage itself. Its blossoms come in long, compact spikes in May and June.

For about three months in the year, from July to October, the woods throughout the Rio Grande delta are aflame with what the Filipinos call the Fire-tree, the Mexicans, the Bird of Paradise, and the unimaginative botanist, the *Cæsalpina pulcherrima*, the most striking and brilliant of all the group when in blossom. It is a large, straggling, prickly shrub, with abruptly bipinnate leaves, long, flat, sessile, unarmed seed-pods, and large pyramidal clusters of red blossoms fringed with orange, the petals having long, stripe-like claws. A big bunch of red stamens suggests the plumage of the Bird of Paradise, for which the Mexicans have named it. The shrub is in cultivation throughout the State of Texas, but grows in wild profusion in the woods of the Rio Grande Valley.

In contrast to the flamboyant beauty of the *Cæsalpina pulcherrima*, we have the unobtrusive, but once known always loved, little Barradulce, meaning literally "sweet stick"; and truly sweet is the tiny white blossom growing on the slender white stem, with small, gray-green leaves. Much like the Barradulce, though of larger foliage, is the Ciniso, or Ash Plant, which derives its name from the ashen hue of its foliage. The blossoms of the Ciniso come in purple clusters and have a fragrance all their own.

The leguminous shrubs also furnish several very interesting things, the handsomest perhaps, being the Frijolito, or Frijollo (*Sophora secundiflora*). Evergreen, with deep compound leaves divided into numerous leaflets and with clusters of violet butterfly-shaped blossoms which are so heavy in perfume as to cause headache, the shrub attracts and holds attention. Following the blossoms come large woody pods with three or four brilliant red seeds containing a poisonous alkaloid, sophorine. The Huajillo, another variety, bears a handsome white blossom very rich in honey.

An emigrant, I think, but one which is seen everywhere in this section, and for that reason may be considered at least semi-native and having more character than any other tree of the valley, is the stunning Papaya. While its

UPPER—The lovely, ever-blooming, broad-leaved Anacahuita (*Cordia boissieri*), a tree that blossoms every day in the year.

MIDDLE—Not unlike the ebony in general appearance, the mesquite (*Prosopis glandulosa*) is an invaluable tree for arid countries.

LOWER—Another almost perpetual bloomer is the Retama (*Parkinsonia aculeata*), or Spanish broom.



UPPER—The Huistache (*Vachellia*) belongs to the acacias. The foliage is dainty and of a charming blue-green color and the blossoms of this tree are much used by French perfumers.

LOWER—Born to the purple is the beautiful *Alhucema*, magnificent when in bloom, during the months of May and June. The foliage has the aromatic quality of the sage itself.

fruit does not reach the same huge proportions as in Mexico, where it flourishes and is called the melon zapote, it does remarkably well here, and the fruit grows to about the size of a small cantaloupe. The tree is tender and succumbs easily to frost, but it is of such rapid growth and bears at such an early age that an occasional freeze matters little. The trunk is vertical and interestingly marked with cicatrices made by falling leaves. The large seven-lobed leaves are lovely and droop in a protective way over the fruit. The blossoms of the female species are few and large; those of the male, which is usually found side by side with its consort, are small, fragrant, and profuse, creamy-yellow in color on a very milky stalk. The fruit, which contains a large amount of pepsin, is said to be the finest vegetable digestant known. Both the leaves and fruit have also the peculiar quality of making meat tender, and the natives hang their meats in the branches of the tree for that purpose.

Stateliest and most imposing among the flowering plants of this country, one must concede the palm to that "majestic lily of the tropics," the *Yucca aloifolia*, or Spanish Bayonet, as it is known locally, with the Maguey (*Agave Americana*), which reaches an even greater height, running it a close second. The former grows to the height of about twenty feet and bears at the top of its great flower-stalk a gigantic cluster of pendant creamy-yellow blossoms of delightful fragrance, called by the Mexicans "Lluvia de Oro" (Shower of Gold). Its upper leaves are stiff and erect, while the lower ones are pendant. Nothing could be more beautiful, Dr. Van Dyke says in "The Desert," than the waving lightness, the drooping gracefulness, the swaying, tossing well-called Shower of Gold. The pollination of the *Yucca* is said to be one of the most wonderful chapters in the history of pollination.

The Maguey (*Agave Americana*), commonly called the Century Plant because of their slow growth and infrequent flowering, do not reach their greatest perfection in the Rio Grande Valley, though they are very prolific and reach a height frequently of 25 or 30 feet. Prescott has made the world familiar with the value of the Agave, which he calls the "miracle of nature" to the Aztecs, and describes its "clustering pyramids of flowers towering

above their dark coronals of leaves" most beautifully. He also says: "Its bruised leaves afforded a paste from which paper was manufactured; its juice was fermented into an intoxicating beverage, pulque, of which the natives to this day are exceedingly fond; its leaves further supplied an impenetrable thatch for the more humble dwellings; thread, of which coarse stuffs were made, and strong cords were drawn from its tough and twisted fibers; pins and needles were made of its thorns at the extremity of its leaves, and the root, when properly cooked, was converted into a palatable and nutritious food. The Agave, in short, was meat, drink, clothing, and writing material for the Aztec! Surely never did Nature inclose in so

compact a form so many of the elements of human comfort and civilization."

Many pretty legends are told of the discovery of the life-giving juice of the plant, from which several intoxicating drinks are made. One of the legends ascribes its discovery to the god Izquitecatl; another to a prince of the royal blood of Toltecs. Prescott relates this pretty fable: A noble Toltec named Papantzin, found out the method of extracting the juice from the Maguey and sent some of it to his sovereign, Tepancaltzin, as a present, by his daughter, the beautiful Xochitil, the flower of Tollan. Enamoured alike of the drink and the maiden, the King retained the lovely Xochitil, a willing prisoner, and in after years placed their illegitimate child upon the throne. This was the beginning of the trouble of the Toltecs, as similar things

have been the beginning of trouble from time immemorial. It led to the eventual dispersion and extinction of the race, brought about by the beauty of a woman and through the means of the soul-destroying pulque. However and by whom it was discovered, suffice it to say the Mexican Indians even to this year of grace, 1923, have shown a keen and undiminished appreciation of its use.

With this very incomplete list of the beautiful growing things of the Rio Grande delta, I must, unless a volume is contemplated, stop; but I cannot do so without a casual mention of the numerous lovely exotic vines and flower-laden climbing plants that drape themselves upon walls and trellises and fling themselves even to the very tops of the trees. The dainty coral-colored Corona de la Reina (Queen's Crown) is, perhaps, the most noted and cer-



Papayas. Note the decided difference in the male and the female of the species. In Mexico the trees are cultivated for their fruit, one male to fifty females being used in a grove.

Caciques and Oropendolas

By R. N. DAVIS

Curator of Everhart Museum, Scranton, Pennsylvania

WINTER before last, the writer had charge of an expedition to Panama for the purpose of obtaining natural history material from that region for the use of the Everhart Museum. The enterprise was financed by Col. L. A. Watres, a public-spirited citizen of Scranton, Pennsylvania. A preliminary trip to the Isthmus had been made the year before by the

writer, so that we lost no time from our work on our arrival there. Everybody, from the Governor of the Canal Zone to the humblest laborer, seemed anxious to give us every facility. As a result, we obtained a fair representation of the flora and fauna of that part of the world.

Particular attention was given to the bright-colored and



WAGLER'S OROPENDOLA AND LAWRENCE'S CACIQUE, DISPLAYED IN THE EVERHART MUSEUM AT SCRANTON, PENNSYLVANIA

The two shorter nests are occupied by the yellow-rumped birds known as Lawrence's Cacique. All the other nests belong to the other birds shown, which go by the name of Wagler's Oropendola. These nests are attached to the branches just as they were when on the tree a hundred feet above ground. The branches were cut off by rifle bullets.

attractive birds. One of the most remarkable groups of birds of tropical America consists of the caciques and oropendolas. These birds are related to our orioles and build similar nests. As some of the species are much larger than the orioles, their nests are correspondingly large and long. Most of them are social in their nesting habits and one may see from a half dozen to a hundred nests on some great tree. More than one species may occupy the same tree.

One day we found an enormous tree, five or six feet in diameter, at the end of one of the projections of Gatun Lake. Water entirely surrounded the tree, and in the high top of the tree were nearly a hundred nests of Wagler's oropendola and Lawrence's cacique. We studied various plans for securing some of the nests. On account of the situation and the enormous size of the tree, cutting it down seemed impracticable. Then, too, we didn't want to destroy all those nests. At last we decided we would get a long rope and a ball of twine. By throwing the ball of twine over one of the horizontal branches we thought we could pull up the rope, which we would tie to one end of the twine.

When the rope was in place one of our party would be drawn up to the branch, where he could cut off the desired limb with the nests attached.

The gunner of our party evidently thought he would be elected to do the climbing and he didn't fancy it. At any rate, before our plan was tried he went out one day with a native in his cayuca and returned with three

branches he had clipped off with rifle bullets. The dozen nests attached were ample for our purpose and are now on exhibition at the museum, as shown in the picture. The nests of Lawrence's cacique are about two feet long, while those of Wagler's oropendola are three or four feet long. We did not get any of the nests of the crested oropendola, nor of the Montezuma oropendola. These nests are five or six feet long.

Among all the birds of this group there is quite a difference in the size of the two sexes, the male being much the larger. According to our observations, the female builds the nest and occupies it exclusively. It would not fit the male bird, and his job is to find food for the family.

The word "cacique" is of Indian origin and signifies "chief." Just why it is applied to these birds is not apparent. "Oropendola" is of Spanish origin, and the "hanging gold" probably has reference to the golden colors of the birds and the hanging nests. They are certainly among the most remarkable structures made by any birds.

A pensile nest in a thorny acacia has been quite a puzzle to the writer. Several nests were seen of the same size and appearance and always in the acacia tree. As no bird seen appeared to be the owner of these nests,

we are left to surmise that it belongs to some species of cacique. As the acacia is invariably chosen as the nesting site, it may be the bird obtains protection from the thorns. As the thorns are occupied by a species of biting ants, it is possible that these are the protectors of the birds.



COMMUNITY BIRD LIFE

About a hundred nests of the Caciques and Oropendolas were on this tree. Many of the nests are obscured by the foliage.



THE BUILDERS OF THE WONDERFUL HANGING NESTS

From left to right, these birds are Crested Oropendola, Small-billed Cacique, Wagler's Oropendola, Prevost's Cacique, and Lawrence's Cacique.

Pines of Hearts Content

By L. L. BISHOP

IN Northwestern Pennsylvania—Warren County—is a forest known locally as “Hearts Content.” Comprising approximately 600 acres, “Hearts Content” constitutes the last stand of any extent of original, old growth white pine in the East. As is the rule for the region, a large percentage of the forest in which the white pine occurs is hemlock, with a lesser mixture of maple, beech, birch, basswood, and cucumber.

“Hearts Content” is one of the remnants of what was the largest contiguous soft-wood forest in the State of Pennsylvania—perhaps in the whole East. Originally an almost pure pine and hemlock forest, known as the “Black Forest of Pennsylvania,” covered several million acres of central northern Pennsylvania. Within this stand is what is believed to be the region of the best development of eastern white pine, and it is quite certain that here grow some of the finest specimens of this world-famed forest tree.

“Hearts Content,” so named many years ago by a lumberman who appreciated the forest perfection of the region, is located on the Allegheny Plateau at an elevation of approximately 1,900 feet, 900 feet above the Allegheny River and at a distance of some three miles east. That the forest occurs on some of the highest land of the region is shown by the fact that the Pennsylvania State Forestry Department has chosen as a location for a fire lookout tower, a point only a few hundred yards distant. It was necessary to build a tower twenty feet higher than the ones usually erected in order to be able to see over the “Hearts Content” timber.

SAVING THE BEST FOR THE LAST

Warren County has long been a timber-producing section. As early as 1800 sawmilling was in progress. The material first sought was “cork” white pine. It was taken out as squared timbers and rafted down the Allegheny to

markets at Pittsburgh, Cincinnati, St. Louis, and even as far away as New Orleans. It is seemingly little less than paradoxical to say that of a forest which has for more than a century been subjected to exploitation there still remains “Hearts Content,” the finest part; yet such is the case. The explanation is that for nearly 100 years the tract has belonged to a conservative, farsighted lumber company, a company whose management long ago fore-

saw that the forests of this country were not, as they were oftentimes thought to be, inexhaustible. This management believed in saving for the last at least a bit of the best.

In order to convey an adequate idea of some of these old virgin pines, it is necessary to record the following data concerning the property of which “Hearts Content” constitutes a part: A single white pine stem has yielded ten sixteen-foot logs. Another tree has produced 6,000 board feet of sawtimber. Still another, a stick 20" x 20" x 76', square-edged and sound. The largest tree now standing measures 52 inches in diameter at breast height. A single one-quarter acre has been estimated at 50,000 board feet.

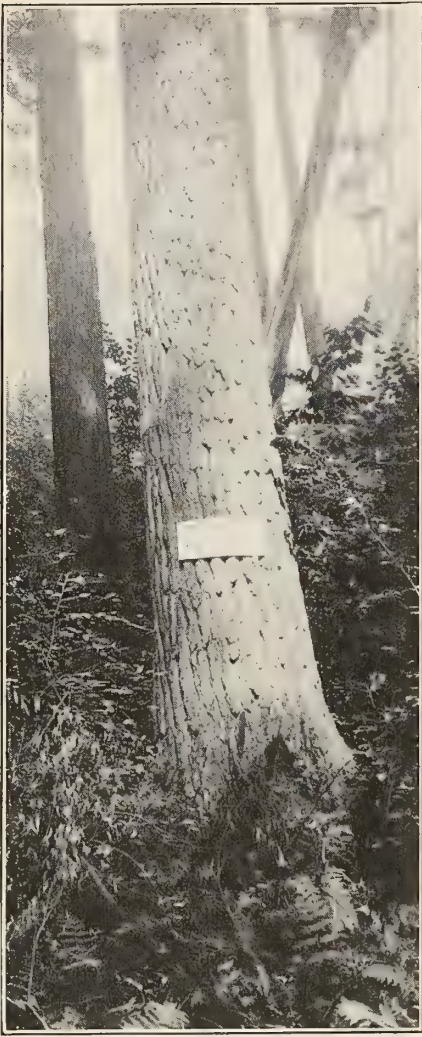
The stand of “Hearts Content,” though mature at this time, contains a goodly number of trees of younger ages. The death rate among the large trees is quite high, but what is taking place is the natural passing of the older speci-

mens, their places to be taken by representatives of the younger generations. It is probable that were this process to continue for a century the appearance of the stand would not be appreciably altered.

During the past several decades it has been the policy of the company owning the timber to salvage such white pine trees as have died. The very favorable logging conditions prevailing over the tract as a whole have made such a plan feasible and, as prices have advanced, the net returns have been more and more gratifying. Any dead



THIS REGION OFFERS A MATCHLESS OPPORTUNITY FOR THE ESTABLISHMENT OF A PUBLIC FOREST FULL OF POSSIBILITIES FOR PUBLIC USEFULNESS



THE LARGEST TREE CUT, A WHITE PINE, YIELDING 6,000 BOARD FEET—TEN 16-FOOT LOGS

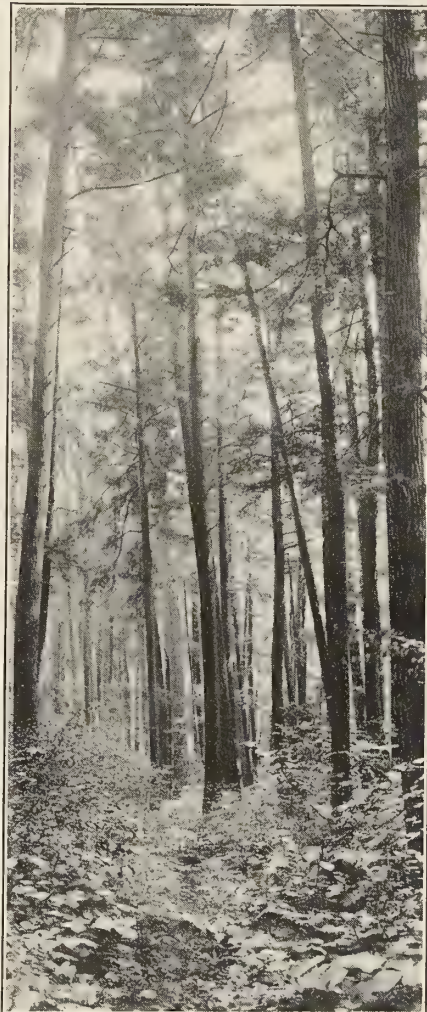
or down pine material within the stand can be removed at a profit.

SHADOWS THAT DIM THE FUTURE

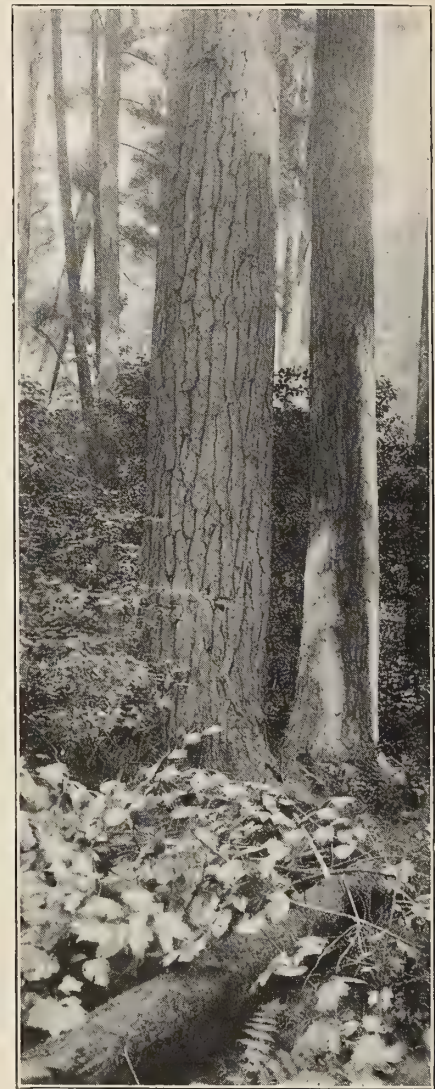
Strange as it may seem, the forest of "Hearts Content" is not widely known. To those who have visited it, its presence has created in nearly every instance a distinct surprise. The invariable question is, "What is to be its future?" If one stands in the midst of the pine and hemlock, he can hear the ring of the ax as timber on adjoining parts of the property is being felled. Even now grade stakes mark the location of the railway into "Hearts Content," which is to be built for the purpose of removing the last of this wonder forest. It is encouraging to know, however, that there is a growing realization on the part of many that "Hearts Content" offers a last opportunity for the establishment of a public forest which would preserve

a matchless sample of the glorious forest which so largely covered the region, but which has been almost entirely appropriated to the use of the present and past generations—a forest most largely endowed with possibilities as to public usefulness.

"Hearts Content" would constitute a Mecca for the tourist, a treasure-house for the ecologist and biologist, a princely domain for the naturalist, a proving ground for the lumberman, and an inspiration for the forester. Once established as a public forest, it is certain that the visitors to this bit of God's outdoors would be numbered by the tens of thousands. It would in years to come be one of the show places of the East. Who can estimate or overestimate the dividends which would accrue to the public through better health, forest enlightenment, and a growing appreciation of the handiwork of nature?



"HEARTS CONTENT" HAS MUCH TO OFFER THE RECREATIONIST, AND IT LIES WITHIN EASY REACH OF TEN MILLION PEOPLE



EVEN NOW GRADE STAKES MARK THE LOCATION OF THE RAILWAY INTO "HEARTS CONTENT"

There are many things that commend the preserving of at least a part of "Hearts Content."

A CAMP GROUND FOR FORTY MILLION PEOPLE

It constitutes the last area of any extent of old white pine in the East; it is located in the midst of what is becoming the Allegheny National Forest, and it could thus be surrounded by National Forest administration and protection. Within close proximity, on the main traveled road, is a State Forestry Department fire lookout tower. From such towers the doctrine of forest protection is effectively spread. All of "Hearts Content" is readily accessible to good roads. Any trees killed by lightning or otherwise can be salvaged. The tract could be so managed as to constitute a demonstration of close forest utilization. Within the wooded



IN "HEARTS CONTENT" LIES STILL A MATCHLESS SAMPLE OF PENNSYLVANIA'S GLORY OF VIRGIN WOODS, AS IT COMPRISES APPROXIMATELY 600 ACRES OF ORIGINAL GROWTH

boundaries is a beautiful spring, the water from which, even in the warmest weather, is only ten or fifteen degrees above freezing. As a camping or public recreational ground, "Hearts Content" has much to offer, as, aside from its forest growth, the region is a most picturesque

one and is within a one-day motor trip of ten millions of population and within a two-day trip of forty million people.

Those interested in the project of preserving "Hearts Content" believe that white pine and hemlock have meant so much to the industrial life of the East in general and



IN THE LAND OF "HEARTS CONTENT"—A MECCA FOR THE TOURIST, A PRINCELY DOMAIN FOR THE NATURALIST, A PROVING GROUND FOR THE LUMBERMAN, AND AN INSPIRATION FOR THE FORESTER

to Pennsylvania in particular, that through some means funds will become available to the end that the last vestige of the once magnificent Black Forest shall not perish.

Old "Tree Pipes" Found in Baltimore

BY N. C. McLOUD

Wooden water pipes believed to have been underground since 1745 have recently been unearthed by workmen engaged in digging into a street in the oldest part of the city of Baltimore. The pipes were made of logs, in sections of from six to eight feet and about nine inches in diameter. Lengthwise through each section a channel about four inches in diameter had been bored. The joining of the sections was effected by the insertion of the tapering end of one log into the bore of the next and covering the joint with mortar, bound with hoops of iron.

Both mains and service pipes were found. The serv-

ice pipes leading to the houses were of smaller logs, with 1½-inch channels. To join the smaller pipe to the main, a copper spigot was used, driven through an opening in the side of the main. A similar spigot connected the service pipe with an iron house-pipe, of later installation.

The wood and copper were in perfect condition when found, and water-works officials stated that they have obviously had much longer service than marks the life of iron pipes. The Baltimore water works date back to 1807, and it is believed that the wooden pipes may have been installed in connection with a factory built in 1745.

Blossom of the Tulip Tree Becomes Hoosier Flower

BY ELIZABETH RAINEY

SHORTLY after the election last November, at which I was elected a member of the General Assembly of the State of Indiana, a letter came from Mrs. Fannie K. Baker, a member of the faculty of the Teachers' College, Indianapolis, asking me to interest myself in a bill to make the flower of the tulip tree the state flower. I knew the tree, and at the moment it seemed to me to be inappropriate for the state flower on account of its inaccessibility. I wrote Mrs. Baker that this thought came to me, but that I would give the matter further consideration and let her have my decision later. She then forwarded to me such a wealth of information concerning the tulip tree—or the yellow poplar, as it is commonly called—that I soon became convinced it was not only appropriate, but was by far the very best selection that could be made.

Some years ago Indiana adopted the carnation as her state flower, but no one has ever been satisfied with it, not because it is not a very beautiful flower, but because there is nothing distinctively Hoosier about it. It is grown in hot-houses and sold everywhere, having been developed from a little English pink. We have wanted something native to the State of Indiana. The tulip tree has grown here so long that "the memory of man runneth not to the contrary," and scientists, who, by the way, call it *Liriodendron tulipifera*, tell us that a few millions of years ago there were sixteen species of the tree, and that during the Ice Age all perished save one in Asia and our tulip tree. The tree is found throughout the middle section of the United States, but reaches its fullest development in the Wabash and White River valleys; so perhaps Indiana more than any other state can claim the tree as her own.

The tulip tree is one of the finest hardwood trees in the world, if judged by size, form, foliage, and the wide range of uses for which its wood is employed. In girth it is exceeded only by the largest sycamores, but it overtops in height all its competitors among American hardwoods, and in grace of form and yield of excellent lumber it has no equal.

Mr. Deam, in his "Trees of Indiana," says: "The tulip transplants easily, grows rapidly, is tall, with short side branches, and is one of the very best trees for reinforcing the woodlot and for other forest planting."

While the tree is known as yellow poplar, it has no kinship with the poplars, but is of the magnolia family, in which it takes high rank because of the rare beauty of its tulip-like flowers, of



whose "golden green and red and white" it has been said, "Our country's flag is scarce more bright."

After my conversion to the idea, I became exceedingly enthusiastic and went about working for the passage of the bill with determination. The fact that many of our forty-eight farmer members had never seen the tree was evidence of the great necessity of doing something to arouse their interest in a tree of such splendid worth, that has been cut away almost to extinction in some localities.

I found many members with the same idea that I at first had, that our state flower should be more accessible, so the children could gather and enjoy them. But why, I argued, must the children gather and handle the flowers to enjoy them? The suggestion reminds one of the thoughtless automobile parties who go out day after day and gather great loads of redbud, dogwood, wild cherry, and often do not spare blossoms of the fruit trees, which are all wilted by the time they reach home. So, I argued, it would be with the state flower. To gather it and let it wither and be trampled under foot would cheapen it. Let us have an aristocratic, queenly sort of flower, and treat it with reverence.

Before the committee I was ably assisted by Mrs. Baker, Miss Lucy Elliott, of the Indiana Historical Commission; Mr. S. E. Perkins, and other members of the Nature Study Club, with the result that there was a unanimous report for passage of the bill, which passed both houses, was signed by the Governor, and now the tulip is the state flower of Indiana. Its reception has been a revelation. The press all over the state has extolled it, article after article has been written, and many poems written long ago have been discovered and reprinted. Mrs. Baker has given one thousand tulip trees, which have been distributed through the Nature Study Club of Indianapolis, two having been sent to each member of the State Legislature. The State Forestry Department and the nurseries are being deluged with orders for them, and it is hoped that in the course of four or five years every man, woman, and child will be familiar with the state flower.

Mortality of Trees

Trees are less fortunate than human beings up to certain ages, according to mortality tables, although some species of trees reach a great age. The sequoia may be 4,000 years of age. A forest at maturity contains about 5 per cent of all the trees that have started life there. The percentage of persons living from ten to fifty years is far greater than in the case of trees. About 95 per cent of trees die before they are eighty years of age compared to 87 per cent of persons.

In some natural pine forests, where the trees grow very close together, statistics show that more than 4,000 trees per acre die between the ages of ten and eighty. With pine, birch, aspen, and all species that demand a great deal of light, the death rate is very heavy.

The A. B. C. of Forestry

Sir William Geary, in his park at Ozone Heath, Hadlow, England, has planted an avenue of trees nearly half a mile long. The unusual thing about this long row is that each tree is different, and that all the letters of the alphabet are represented in the lot. The alphabet of trees is composed of the following saplings: aspen, beech, catalpa, dimorphanthus, elm, fraxinus, gum, hornbeam, idesia, juglans, koelreutia, larch, maple, negundo, oak, poplar, quince, rowan, sycamore, tulip tree, umbrella pine, viburnum, willow, xanthoceras, yellow tree, zelcova.



Oysters Growing on Trees

BY S. J. RECORD

Here is pictorial evidence that the old joke about oysters growing on trees is not so absurd as it sounds. The photograph shows a fringe of a mangrove tree extending out from the shore on its stilt-like roots. It is a common thing for oysters to attach themselves to these appendages, and when the tide is low clusters of them are seen hanging above the water, as shown here. This picture was taken in southern Florida.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

A Tiny Host a Mighty Enemy

THAT the little harmless-looking currant bush can put to flight a whole army of pine trees does not sound reasonable.

Nevertheless it can, and, what is more, it is doing it. The story of the conflict between the currant and the pine is told by Mr. Detwiler in "Spare the Currant and Spoil the Pine," which appears on page 337 of this issue of *AMERICAN FORESTRY*.

There is more than reading interest in this story of the insidious warfare of bush against pine. One of our most important timber trees is at stake, the all-beneficent white pine—a tree which will ever loom high in the forest history of America. White pine forests, sacrificing almost their last virgin growth in the service, literally built the pathway of the nation's progress from the Atlantic westward through the Middle West and across the Great Plains. Today a second generation of white pine, starting on the same Atlantic coast, is writing a new chapter in our national history—America's awakening to the value of newly grown forests.

Young pine in New England is valuable. It is coming to be recognized as one of the most valuable products of

the soil. Conservative New England farmers are admitting it. The same is true of bankers, many of whom, before loaning money on New England farms, are requiring that the pine woodlands be adequately protected. Agricultural colleges are at last awakening to the value of growing pine as a farm crop, and government agencies are bestirring themselves to meet the awakened demand for information on timber culture and forest protection.

There is nothing magical or fanciful about this. Trees grow. Bind them with bands of iron and they continue to grow. They are wood to the core, and wood is dear. It is becoming more so year by year, as the long reach for lumber stretches ever further westward. New England fields which a decade or so ago were looked upon as merely pine brush, worth little or nothing, are today young forests, yielding crops bringing \$500 to \$1,000 an acre.

New England needs these forests. The nation needs the lesson which New England white pine is teaching. The blister rust must not be allowed to spoil the page. The little currant is a mighty enemy. Its extermination in the vicinity of pine lands must go forward vigorously and without abatement.

A Mine or a Crop?

TIMBER mining, we are told by the United States Forest Service, is responsible for our present forest predicament. In a publication just issued, entitled "Timber: Mine or Crop," which appears as part of the new Department of Agriculture year book, the story of America's timber mining is told in all its significant details. This report is an outstanding contribution to the cause of forest education.

It asks the American people whether timber shall be henceforth considered a mine or a crop, and is based in part upon data and information compiled for the Capper report, but it is much more exhaustive, embracing a great amount of new information bearing upon our forest improvidence, its causes, and its effects. It traces our forest exploitation from the early years of the nation and presents a clear and impressive picture of our present forest emergency. It points out, with much substantiating data, the effects of our national timber mining policy, and offers definite suggestions as to what should be done to bridge the gap from the worked-out timber mines of the past to the incoming timber crops of the future.

Three outstanding measures, it says, are necessary to bring about the growing of timber crops on forest lands.

The first is to stop unrestrained forest exploitation, which has left 81 million acres of forest land largely barren, 250 million acres more only partially productive, and is adding 5/10 to 10 million acres each year. The second is to reduce waste in the use of timber. The third important step is to increase timber production, to the full capacity of the land, by more extensive planting, better fire protection, and less reckless cutting.

"By recognizing the importance and urgency of two great national problems, land use and timber supply," the report concludes, . . . "we can grow on our forest lands timber crops sufficient to meet our wood requirements, if public agencies and private owners each do their share. The alternative is idle forest land and timber bankruptcy."

While longer than necessary, the report is nevertheless a mine of information and it will serve a long-felt want for a comprehensive, up-to-the-minute handbook on the needs and progress of the forest movement in America. More than that, it lays the whole case clearly and exhaustively before the American people. It is up to them to decide whether the American forest shall be managed as a mine or a crop.

Minnesota Increases Its Fire Budget

MINNESOTA is majoring in forest fire protection. Almost 80 per cent of the money appropriated for forest work during the new year will be spent to stamp out fire from the North woods. The state legislature, meeting during the winter and spring, has recognized that Minnesota has a real fire problem. It has increased the state appropriation for forest fire protection by \$45,000, which, although a small increase compared to the magnitude of the fire problem, will aid materially in providing better fire protection in the North country.

Last year over 250,000 acres in northern Minnesota were burned over. It is safe to say that these acres will not attract this summer, or for a good many summers to come, many tourists. Neither will they grow much timber. Fires which literally eat up 250,000 acres a year, frightening tourists from the country, destroying millions of dollars in property, and crippling the growing power of the soil are indeed a menace worthy of the maintenance of a fire organization fully equipped to meet the emergency.

The legislature took another constructive step in passing a bill proposing an amendment to the state constitution which will provide for a yield tax on timber. This measure will be voted on at the next general election, and, if approved by the people, it will open the door to the development of constructive timber taxation in the state. The legislature, however, did not pass the State Forest Bill, which would have added additional state lands to the state forests. The bill was opposed by some of the larger counties in the northern part of the state. It is unfortunate for the state as a whole that this measure did not pass. Minnesota now owns some 600,000 acres of unreserved timber, which it is disposing of at the rate of some 40,000 acres a year, on the theory that the raw land is needed for agriculture. Meanwhile available cut-over land in the state is now fifty to one hundred years ahead of agricultural development. When the state's timber is gone and the people are holding an overburdening sack of barren and brush land, everybody will be sorry and will wish that a different policy had been followed.

A Worthy Proposal

A FEW days ago a man called upon the editor and spoke as follows: "Alfred Nobel bequeathed a fortune to reward outstanding contributions to human knowledge. Andrew Carnegie established a fund of five million dollars to reward heroic and unselfish service in saving human life. The City of Philadelphia has created a fund to reward yearly the citizen who renders the greatest service to his city during the year. Why not an endowment for forest-fire prevention?"

Why not? Certainly, the cause is worthy of the act. Nothing stimulates human endeavor like reward, and certainly the annual destruction of forests by fire every year calls for stimulated effort. That the idea is practical as applied to forest-fire prevention has already been demonstrated, in a very small way, to be sure. Some fire-protective organizations, states, and lumber companies have followed the practice either of giving prizes or writing special letters of appreciation at the close of every fire season to individuals or agencies who during the season have rendered conspicuous service in forest-fire prevention, detection, and suppression. This recognition, though small, has done a surprising amount of good in stimulating a wide-awake sentiment against fire.

With an industry as great and diversified as the lumber industry and with a heritage as vital as our forests, the raising of an endowment fund to carry on our forests from one decade to another and from one generation to the next ought not to be difficult. A fund of \$100,000 would be sufficient for a beginning. There are more than fifty industries in the United States dependent in whole upon our forests; there are many dependent in part.

There are six million hunters, to whom the woods represent the best of the out-of-doors. There are six times that number of people who go to the woods annually for recreation. There are a hundred and ten million people who use and need the forests and their products every day. There are an infinite number of newspapers, trade periodicals, popular magazines, which subsist by virtue of the forests.

To all these interests, \$100,000 is an item of small moment. They are spending that amount and more every five minutes of the day. But that sum, properly handled, to reward distinguished service in protecting our forests would be a mighty force. It would be an ever-growing public education, obtained at a ridiculously low cost.

Such an endowment fund would provide a sum of six or seven thousand dollars annually to be distributed in the form of prizes or other awards to individuals, Boy Scout units, schools, fire-protective organizations, sportsmen's clubs, towns, etc., which have rendered outstanding service in saving our forested out-of-doors from the red devastation of the woods. These awards, handled regionally, would serve to stimulate public interest in forest protection in every section in the United States. In the course of a few years they would endow our citizens, old and young, with an appreciation of trees and forests so deep and lasting that the cry "Forest Fire!" would be the country's call to arms.

Who will be the first to pledge a substantial sum toward such a fund? AMERICAN FORESTRY wants to publish the name far and wide.

Loblolly Pine on the "Eastern Shore"

BY J. A. COPE

A TRAIN ride through the level stretches of alternate sandy fields and pine forests of the Atlantic Coastal Plain seldom creates a desire in the average person for a closer acquaintanceship with the region. Yet these sandy soils are admirably suited for the production of truck crops and they contribute no small portion to the agricultural wealth of the Coastal Plain states.

The ever-present pine, too, is more and more taking a prominent position in the economic development of the region. On Long Island and in New Jersey it is the pitch pine; from the Delaware Peninsula southward it is chiefly the loblolly pine, and in South Carolina and Florida it is the slash pine. They all belong to the group of hard or yellow pines, but are readily distinguished by differences in needle, bark, and cones, as well as by their geographic distribution. As is to be expected, the longer growing season of the Carolinas and Florida brings about greater yields of loblolly and slash than is found to the north in the pitch pine. Difference in the species, as well as soil moisture, also influences the variance in the rate of growth. On the other hand, while growth is slower at the north, the markets for every kind of forest product are better, not only because they are relatively close at

hand, but also because the transportation facilities for getting the forest products to the markets are adequate and complete.

Given a rapidly growing native species and an accessible market that will permit of close utilization and we have the basis for an intensive practice of forestry. Along the 1,100-mile stretch of Coastal Plain there is one section where these two factors are most happily combined. This is the lower portion of the Delaware Peninsula, comprising roughly one county in Delaware, five in Maryland, and two in Virginia. The North has the markets and railroads, the South has the fast-growing species, but the "Eastern Shore," as that portion of Maryland and Virginia is called, has them both.

These eight counties, containing approximately 4,000 square miles, mark the northern limit of the commercial range of the loblolly pine. It seems quite as much at home here as in the Carolinas—a little less tall, a little less diameter growth in a half century, but still quite able to qualify as a fast-growing tree.

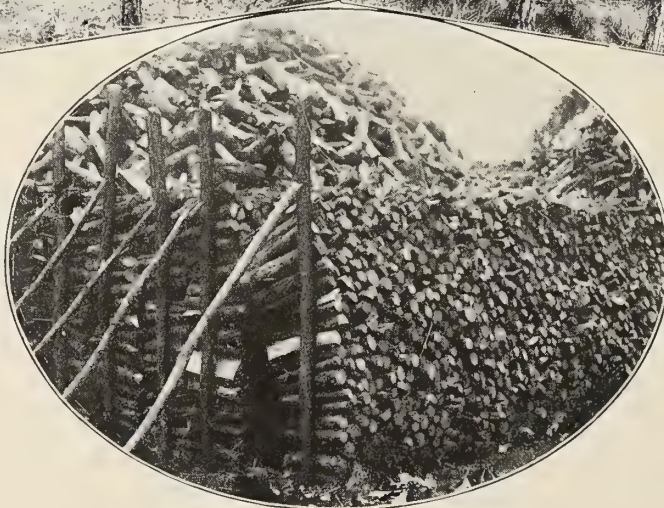
We are so used to hearing about the wonderful growth made by the white pine on the rocky slopes of New England that we are inclined to put it in a class by itself.



A 14-YEAR-OLD PINE FOREST CONTAINING 26 CORDS OF WOOD TO THE ACRE AND READY FOR THINNING



AFTER THINNING AND THE PRODUCT, 11 CORDS TO THE ACRE, STACKED FOR MARKETING



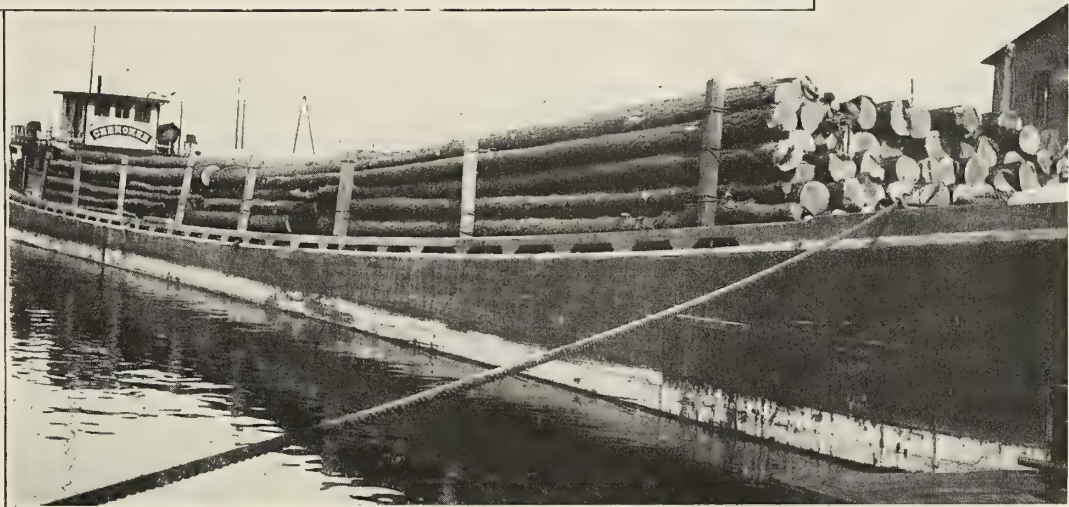


place to start life, just as long as there is sufficient moisture to induce germination and the mineral soil is at hand for the little rootlets to plunge into at once. The young loblolly asks no favors.

On the dense layer of needles that cover the forest floor the little seeds have not a chance in the world; they lie there until a particularly wet spell induces germination and, no soil being at hand, the seedling withers and dies. An interesting example of how the seeds lie dormant in the pine needles was noted in Talbot County, Maryland. A farmer covered his strawberry bed with a load of pine needles late in the fall, and the following spring raked the needles back to uncover the strawberry plants. Later in the summer he was much surprised to note little pine seedlings covering the whole strawberry

THE STORY WRITTEN BY GROWTH RINGS

This pine was crowded and held back by too many neighbors. When they were thinned out, five years ago, its increased growth, as shown by the wide rings on its outer circumference, is conclusive evidence of the forester's art.



DOES A PINE CROP PAY?

This old barge seems to answer the question, for its load of loblolly piling, from the Eastern Shore of Maryland, is worth \$10,000.

As a matter of fact, volume for volume, over a period of years, the loblolly is a worthy rival of the white pine.

CORN ROWS IN THE FOREST

The other common name for loblolly pine is old field pine, which gives some idea of the past history of the many splendid thickets one sees all over the Eastern Shore. The winged seeds seem to strike root almost the minute they alight on the exposed mineral soil of an abandoned field. Many a farmer has allowed a field along the edge of the woods to lie fallow for a year or so, and when he returns to plow he finds a carpet of pine seedlings from 3 inches to 6 inches in height and extending out into the field a hundred yards or more. Under favorable conditions of soil and abundant moisture, it is not uncommon for seedlings to grow 8 inches to 10 inches the first year. The seeds do not object to sod either as a

bed. That was six years ago. And now the fine little clump of pine shown in the illustration stands in the middle of his field.

So, as you ride along in the train and see these dense stands of pine, all the trees in one stand being so nearly of the same size and height, it is a safe guess that the stand started in an old field. In fact, in many 50- and 60-year-old stands the corn rows are still plainly visible, mute reminders of the fact that after the Civil War there was no slave labor to cultivate the great plantations.

SURVIVAL OF THE FIT

No sooner are the little seedlings established than a fight is on for life. Nature does not believe in race suicide, and it is not uncommon to find as high as 10,000 young pine seedlings on one acre. Forty years hence—this acre could not possibly support more than 400 full-grown loblolly



TYPICAL WOODLANDS

Upper—A six-year-old pine forest which grew out of a strawberry bed when the farmer mulched it with pine needles.

Middle—A 45-year-old stand ready for harvesting, 30,000 feet to the acre.

Lower—Veterans of 80 years are today a rare sight in Maryland's pine country.

pine trees, so in those intervening decades one can realize what a slaughter must occur. At first thought this seems unnecessary wastefulness on the part of Nature, but in the case of loblolly pine, at least, a very useful purpose is served. The trees are forced to seek their light overhead; the side branches die and fall off, and the trees attain a clean-limbed appearance at an early age.

Nature will bring about the survival of the mature crop unaided, but where some profitable use can be made of the trees that otherwise would die and go to waste, it is a mighty good plan to help Nature out. The trees shown in the thinned stand on page 368 are in a fourteen-year-old stand of pine that had been reduced through competition to 1,800 trees to the acre. Since there was an active demand in the neighborhood for pine stove-wood, it was thought that a thinning could profitably be made in this fast-growing thicket. So Nature was helped to the extent of removing 800 trees to the acre, leaving behind in 15 cords of wood 1,000 of the well-developed saplings. The wood from the 800 trees when stacked, after cutting and splitting with a special machine, amounted to 11 cords and was sold at a net profit of \$1.00 a cord, or \$11.00 an acre, and, in addition, the stand was improved. In another five years Nature can be helped by another thinning.

THE PROOF OF THE PUDDING

But, after all, it is on the final crop, at the end of a given period of years, that any species' claim for consideration as a fast-growing timber tree must rest. Rather than submit any figures of careful measurements made on growing stands, I am citing the signed statement of a reputable lumberman who kept a

careful record of the actual lumber sawed from a tract in Somerset County. He obtained a total of 490,100 board feet of square-edged lumber from an area which a careful compass-and-chain survey showed to contain 12½ acres, or approximately 39,000 feet to the acre.

A ring count of many fresh-cut stumps showed the age of the trees to be 47 years. At the time of cutting the prevailing stumpage price was \$7.50 a thousand feet, which made this little tract worth \$292.50 an acre. There were also 125 cords of slabwood and 140 cords of lops

over gum, in that it does not have to be steamed before veneering.

Not only may excellent yields be obtained in a half century or under, but provision for another crop right on the same land may be made by leaving scattered seed trees, followed by a disturbing of the surface of the ground so that the mineral soil is exposed. Four or five trees to the acre will do the trick, and there is no need to worry about windfall.

If the mature stand can be cut in strips, there will be no need for seed trees, the whole bordering stand serving in that capacity. In cases where it is desired to establish a forest on waste land where no seed trees are at hand, it is a simple matter to set out young loblolly pines, and the growth made is quite up to the natural stands.

One of the plantations is only seven years old, and yet the average height is twenty feet. The most significant fact about this plantation is the source of the stock. It did not come from a nursery and it had not been carefully transplanted to develop a vigorous root system. A farmer simply went out along the edge of the woods and lifted



ABANDONED FARM LAND RECLAIMED

This picture shows how loblolly pine takes possession of abandoned farms and gives the land a worthy job.

and tops obtained from the area, which easily ran the value up to \$300.00 an acre. This is equal to an annual return of \$6.00 an acre. If a value of \$15.00 an acre is placed on the land and interest and taxes are computed for 47 years, a net profit of \$175.73 is shown.

Of course, this is better than the average growth for the peninsula. On the sandy soils of the higher elevations the yield is less. But well-stocked stands averaging 20,000 board feet to the acre at 50 years can be found in many parts of the peninsula.

OTHER USES THAN LUMBER

Within a four-mile radius of the railroad, piling is the most profitable use for the straight trees. Loaded on the cars, piling is worth from 10 to 20 cents a running foot. The 70-foot sticks pictured were worth 20 cents a running foot, or \$14.00 apiece, and the barge-load of 700 sticks has a value pretty close to \$10,000. The trees too crooked for piling can be disposed of as mine props, or, sawn up into short bolts, they are readily usable for making nail kegs or potato barrels. For sections more remote from the railroad, water shipment can be made use of for such products as split cordwood for the Baltimore and Washington markets, or pulpwood for Pennsylvania paper mills.

As veneered stock, the loblolly makes an excellent substitute for red gum, used so extensively in the manufacture of peach and tomato baskets, and it has an advantage



PINE TO PAPER

Another product from the pine lot—peeled pulp wood—which finds a ready market on the Eastern Shore.

little seedlings from 9 inches to 15 inches high and set them out in the field he desired to plant up.

The "Eastern Shore" affords an excellent opportunity for an ideal combination of farming and forestry. On the better soils one may grow, and feast, too, on sweet potatoes, cantaloupe, strawberries, and tomatoes, while on the poorer soils the loblolly pine is growing the material for the containers to ship these products to a clamoring market. Not only does it provide containers for these agricultural products, but for the wealth of sea food drawn from the near-by Chesapeake as well.

Why the Flowers Wear Petal Dresses

BY DOROTHY ARNO BALDWIN

"SOMETHING must be done or the Flower People will die!"

It was the Rose who spoke. All the Flower People were gathered around her, looking very sad. You never, *never*, would have guessed who they were, for not one of them had a petal dress and, what is more, they never had had any! Even the Rose wasn't much more than a stem and a few leaves, and at the top of the stem a clump of stamens to hold her pollen, and a pistil with tiny rooms inside in which to make seeds.

There was a long silence after the Rose had spoken, and just as it began to seem as if nobody would ever speak again, Mother Nature happened along. She had a way of appearing at just the right time.

"Good morning, little Flower People," she said, gaily. Then she stopped short.

"Dear me! What *can* make you all so sad this fine summer morning?"

"We have enough to make us sad," said the Rose, "for scarcely one of the seeds we made last year sprouted this spring. The few that did sprout were so weak that the new plants aren't growing well at all. If things keep on in this way, there won't be any Flower People pretty soon."

"What can be the matter?" said Mother Nature. "Haven't you all had plenty of nice fresh pollen, and hasn't it been placed so it will fall in just the right spot to reach down into the seed chambers and help make your seeds?"

"Yes, we've always had plenty of pollen, and it always falls in the right place, but lately a good deal has been lazy and doesn't reach down far enough to find the seed-room. Maybe that's where the trouble is."

"Let's see now!" said Mother Nature, briskly, to the Rose. "Just shake a little pollen down onto your stigma. Why, you haven't any pollen left!"

"I've used it all up," said the Rose, "and not a single grain has gone to work. My sister still has a little, though. Perhaps she'll lend me some."

"I'm sure she will," said Mother Nature, and taking a few grains of pollen from the stamens of the sister Rose, she sprinkled it on the stigma of the other.

"There! That's good pollen, and I don't see any reason why it shouldn't make seeds for you. Now you just sit quiet here for a while and see if anything happens while I set the winds to work."

While Mother Nature was calling the winds and giving them her orders for the day, the little Flower People made a ring around the Rose and waited to see if anything would happen. They could scarcely breathe, they were so excited. The Rose was excited, too, but pretty soon she began to smile, oh, ever so faintly! Then her smile grew a little brighter and a little brighter, and she said:

"I think"—then she stopped.

"Oh, *what?*" cried the Flower People all together. "Is the pollen beginning to work for you?"

"Yes! Yes! It is!" cried the Rose. "It's stretching out tiny fingers and reaching down, down toward my seed-room! It has found the door! Now it's pushing its way in!"

"Oh, Mother Nature! Mother Nature! The pollen has begun to work for me!"

Mother Nature sent the winds scurrying and hurried back to her little Flower People, who were all on tiptoe with excitement.

"Splendid!" said Mother Nature. Then she wrinkled her forehead and thought hard.

"Yes, it must be," she said, after a moment. "That has been the trouble with all of you, I'm sure. You all need pollen from each other. If your own pollen won't work for you, somebody else's pollen will."

Then Mother Nature wrinkled her forehead again.

"How am I *ever* going to find time to carry pollen back and forth for all of you? I simply can't do it. Why, there are millions of you everywhere!"

"Couldn't the Bees and the Butterflies and maybe the Humming-birds and some of the little Creeping Things help?" suggested the Rose. "There are millions of them, too."

"That's so," said Mother Nature. "They shall help. But you're all such tiny little things that they'll never be able to see you. I'll have to make some bright-colored dresses for you, so they will know where to find you."

Mother Nature hurried to her store-room, and came back with her arms full of petal cloth, softer than silk. Some of it was red and some was blue, some was yellow and some was purple, and there were pink, and orange, and all sorts of other shades besides. With her scissors, Mother Nature cut out millions of petal dresses and fitted them to the flowers. Then she embroidered them with lines and dots of other colors that would show the Insect People where they must go to find the pollen, and where they were to leave it in each flower.

When the Flower People were all dressed, Mother Nature took the honey jar out of her pantry and put a drop of sweet-smelling honey in the center of almost every flower.

"That's to be a reward for the Insect People," said Mother Nature. "They like sweet things."

No sooner was the last drop of honey placed in the last blossom than there was a tremendous buzzing, and the air was filled with Bees and Butterflies and Humming-birds, and quantities of little Creeping Things came crawling from every direction to see what all these bright, sweet-scented things were.

Such excitement as there was! Each one of the Flying and Creeping Things chose the flower he liked best or thought the prettiest, and when they found that delicious honey hidden away inside, they worked with a will, carrying pollen from flower to flower. The next spring a whole army of seeds sprouted and grew into fine, strong plants, and ever since then the Flower People have worn gay petal dresses, so that the Flying and Creeping Things won't forget to visit them.

General C. C. Andrews

1829 - 1922

IN addition to the deaths this year of Dr. J. T. Rothrock, of Pennsylvania, and B. E. Fernow, of Toronto, Canada, another pioneer of forestry in America has passed away. General C. C. Andrews, of St. Paul, Minnesota, died on September 21, 1922, at the age of 93. Not widely known outside of Minnesota, the debt which forestry owes to him is not fully appreciated.

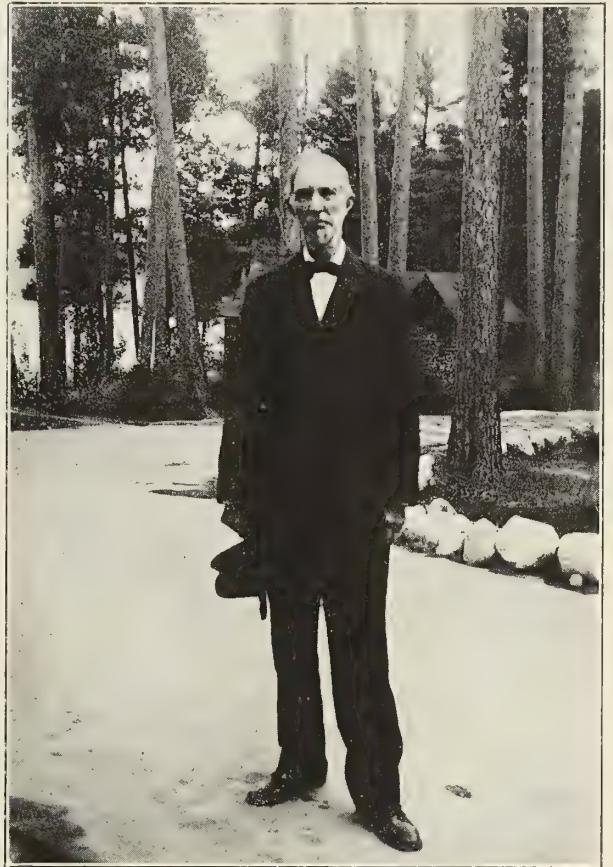
General Andrews, a New Hampshire Yankee by birth, first came in contact with forestry when he was appointed United States Minister to Norway and Sweden, in 1869-'77. His report on forestry of Sweden, furnished to the United States Department of State in 1872, is one of the earliest forestry documents published in America. From that time on, General Andrews became a missionary, preaching the doctrine of forestry in a State wholly devoted to forest exploitation—"the voice of one crying in the wilderness"!

In 1894 came the first of the awful holocausts with which Minnesota has been afflicted—the Hinckley fire. Out of that tornado of destruction sprang the first forest-fire law of Minnesota, with General Andrews as the chief fire warden. This position he held for seventeen years of unremitting effort. His annual reports constantly set forth the merits of forestry as opposed to needless destruction of Minnesota's forest wealth. From the *Pioneer Press* of August 6, 1907, we quote:

"For the twelfth time, Minnesota's prophet of forestry, General C. C. Andrews, presents to the Government and people of the state his annual report. For nearly thirteen years General Andrews has given to the forestry interests of the state the most painstaking and conscientious study; to the protection of its forests against fire, in his capacity as chief fire warden, the most vigilant and watchful care. . . .

"But his service as fire warden, important as it has been, has not paralleled in magnitude that which he has sought to render in the capacity of a public teacher of the principles of forestry. By the conditions of the act creating his office, it was made a part of his duty to 'disseminate information concerning forestry.' That part of his commission he has interpreted in the terms of the enthusiast—more and more so as the mistakes and wastefulness of the state's policy toward its lumbering interests became clear to him and he perceived the necessity of providing—in Minnesota, the traditional 'home of the pine' and the storehouse of a forest wealth once deemed 'inexhaustible'—against a treeless future. He has been indefatigable in traveling over the state as the herald and exponent of rational forestry. In lectures before schools, colleges, and societies; in frequent

contributions to the newspapers; in conversation with individuals and in labors before legislative committees, he has presented such an array of facts and figures as should, as the result of his work, have made Minnesota foremost among all the states in its provisions for maintaining its forests and averting an impending lumber famine. His annual reports have been masterly in their presentation of the forest situation here as compared with that in Europe and in other states of our Union,



GEN. C. C. ANDREWS

The "Grand Old Man" of forestry in Minnesota.

and in their arguments, verbal and pictorial, for the substitution in Minnesota of a wealth-producing for a wealth-destroying system."

When, in 1911, his labors bore fruit and a modern fire system was established under a trained executive, General Andrews was given the position of Secretary of the State Forestry Board, which he held until his death, last year.

Upon the rock of his devotion to forestry was built the State Forest Service and the strong public sentiment for forestry in Minnesota.

The Blazed Trail of Forest Depletion

[Continued from page 328]

STATE SHOULD BUY LAND FOR FOREST USE

The hillsides about Norwich today are bare. No trees of merchantable size remain, and in many places the young growth is sparse and weak. The utilization at Norwich was probably more complete than that of any other large lumbering operation in America. To use what is cut up to the last fragment is good business, but it is not enough. No provisions were made for forest renewal. Practically no old growth and only a thin sprinkling of inferior young growth is now present on the cut-over areas. The land is lying idle, although if it were given proper protection and care it is capable of producing crop after crop of valuable timber.

The best way to make this land produce wood is for the state to buy it. If handled properly, the 30,000 acres will produce annually 30,000 cords of wood or their equivalent. This amount of wood is sufficient to maintain a sawmill with dependent wood-using plants. It is easy now to see how much better and wiser it would have been if a mill with a daily capacity of 50,000 board feet had been erected at Norwich in place of the big mill, with a daily capacity of 300,000 board feet.

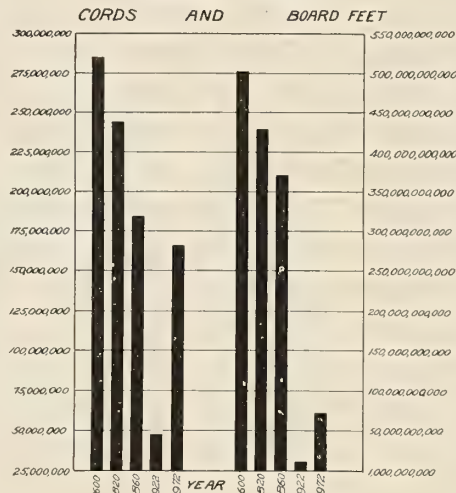
When operations started, in 1910, it would have been possible to work out a permanent cutting plan whereby 13,000,000 board feet of lumber and 12,500 cords of wood could be cut annually. This would have insured a permanent supply of raw material not only for the sawmill, but also for the stove mill, the pulp mill, the acid plant, and the kindling-wood establishment. Had this been

done, Norwich would be a busy and prosperous place today instead of an abandoned lumbering town in which poverty has come to stay.

HUMAN LIFE DEPENDENT UPON FORESTS

The American lumberman has reaped, but he has not sown. Slowly but surely we are

WOOD IN FORESTS OF PENNSYLVANIA



awakening as a people to the deadly errors of the past. Human life all over the world is absolutely dependent upon the forests. Without wood we could have no manufacturing, no agriculture, no commerce, and civilization, as we know it, would come to an end.

Our appetite for wood is unparalleled in

the history of nations. We use raw wood in more than 1,500 ways, and we use more of it per capita than any other great nation. We must not overlook the fact that our forests have helped us to develop from a starving and struggling band of colonists to the richest and most advanced nation on the face of the earth. Wood we must have, but in order to have wood when we need it our idle forest land must be made and kept productive.

In the United States there are invested today \$3,000,000,000 in manufacturing plants where the raw material is wood. One-eighth of the total population of the country—14,000,000 people—are dependent upon wood-working industries for their livelihood. In view of this bare fact, it is a serious matter to see our sawmills closing down, our lumber towns disappearing, and our hillsides and mountain tops lying bare, impoverished, and idle.

If any one doubts that trees have a profound influence on civilization, let him look at China. She offers an excellent example of what deforestation means. Nations made treeless by the hands of man are decadent nations. Under such conditions people have to spend so much time keeping alive that they cannot think much about making progress. Our problem is to avoid going the way of China. Our ancestors lived in a world of trees, we live amid acres of desolation. The hour for action is not ahead. It is here. The people of today must provide for the forests of the future. We cannot grow a crop of trees in a day or a year, or even in a generation.

Advertising Shortens the Road to Success

Do you doubt that a new hatter could spring up in New York and, with honest hats and brilliant advertising, in five years take its place abreast of the leaders of fifty years? It has been done.

Do you doubt that a new thought could arise in pencils, and, in two years, backed by good advertising, make a place for the pencil on the desks of the nation? That, too, has been done.

Do you doubt that a New York department

store, in a bad year, could, largely through the improvement in its advertising, attract 110,000 new customers to its shop? That was done, last year.

A fine old business may consider advertising as a protection for today and insurance for tomorrow, but to the young growing business it is a pair of seven league boots, which bring fame, friends, and volume, years before their normal advent.

A detailed analysis of the circulation of AMERICAN FORESTRY will be ready for distribution to advertisers the middle of June.

Send for your copy now.

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President Harding Reassures Forest Committee

[Continued from page 329]

been much reduced. The amount has been \$450,000 for this year and the same for last year, which does not permit the government to compete in the market.

"With ever-increasing pressure on the forest supplies of the country, the valleys in the eastern mountains are completely cut out. The timber remaining on the high slopes is important not only in preserving the navigability of streams, but also the water powers and timber supply. It requires different treatment than that given by ordinary lumbering and must be taken in hand promptly if saved from further denudation.

"Fire follows almost invariably in the slash left by lumbermen and injures profoundly the character of forest growth that follows. Mountain soils are inflammable.

"Prices are constantly rising. The National Forest Reservation Commission is now paying for cut-over land sums which twenty years ago would have acquired the land and the uncut timber.

"We believe that these lands in the eastern mountains, as delimited by the Forest Reservation Commission, must come eventually into public ownership, and that the work already well underway should be brought to a reasonable conclusion. We recommend, therefore, to your consideration a restoration of the sum formerly appropriated, namely, \$2,000,000 annually."

The organizations represented by the delegation which conferred with the President were:

American Newspaper Association, Elbert H. Baker, Cleveland, Ohio.

National Forestry Program Committee, R. S. Kellogg, New York City.

Chamber of Commerce of New Haven, Connecticut, Charles W. Whittlesey.

International Paper Company, New York, Julian E. Rothery, Forest Engineer.

North Carolina Geological and Economic Survey, Joseph Hyde Pratt, Director, Chapel Hill, North Carolina.

Merchants' Association of New York, F. B. De Berard.

American Paper and Pulp Association, Milton E. Marcuse, Richmond, Virginia, and D. A. Smith.

United States Pulp Producers' Association, New York, Thomas W. Ross.

Springfield Chamber of Commerce, Massachusetts, Benjamin A. Hapgood, Secretary.

Western Pennsylvania Branch of the Pennsylvania Forestry Association, Pittsburgh Flood Commission, Allegheny Highway Association, Pennsylvania Board of Game Commissioners, Pennsylvania Wild Life League, J. R. Swift, Franklin, Pennsylvania.

George W. Wheelwright Paper Company, Ellerton J. Brehaut, Boston, Massachusetts.



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that tells what you can see, time required, cost of trips to Rocky Mountain National Park, Mesa Verde National Park, Denver's Mountain Parks, The Glaciers and 60 other short trips. Rail trips: Platte Canyon, Georgetown Loop, Moffat Road.

DENVER TOURIST BUREAU, 513 17th St., Denver, Colo.

American Forestry Association, Henry S. Graves, President, New Haven, Connecticut.

Connecticut Lumber Dealers' Association, J. G. Venter, New Haven, Connecticut.

Champion Fibre Company, Reuben B. Robertson, Canton, North Carolina.

Society for Protection of New Hampshire Forests, New Hampshire Association of Public Utilities, Connecticut Valley Waterways Association, The Connecticut River Company of Windsor Locks, Connecticut, Springfield Navigation Company of Spring-

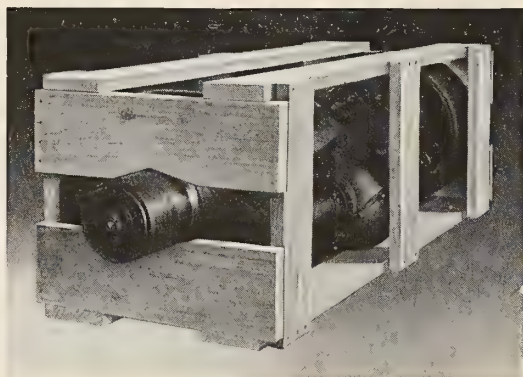
field, Massachusetts, Allen Hollis, Concord, New Hampshire.

National Association of Wood Using Industries, National Association of Wood Turners, William A. Babbitt, South Bend, Indiana.

Connecticut Forestry Association, Henry S. Graves, Vice-President.

Society for Protection of New Hampshire Forests, Philip W. Ayres, Forester, Boston, Massachusetts.

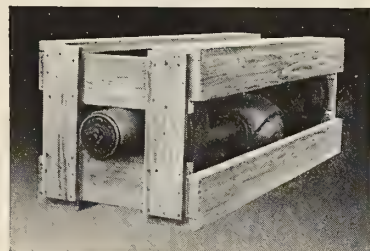
Lee Lamar Robinson, Louisville, Kentucky.



The crate on the left is one of several crates designed for a manufacturer of automotive axles. It takes the place of the crate shown on the right.

The advantages of the new crate are: a marked saving in lumber; a considerable decrease in weight; more rigid construction; prevention of side play; better protection for the drum; lessened labor cost.

A further instance of what Weyerhaeuser Crating Engineers are doing for shippers every day.



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A YEAR'S experience with our special Crating Service has brought out one very significant fact.

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Some of the most startling savings our Crating Engineers have effected, have been made for concerns who were entirely satisfied with the containers they were using.

A year's work among many industries in many parts of the country has proved that in the great majority of cases our Crating Engineers have been able to build better crates with less lumber. And where savings in lumber have not been possible they have built stronger crates and effected other savings of equal importance.

HERE in brief is the story of the two crates pictured above:

The new crate, designed to carry a 3-ton truck axle, requires 36.3 feet less lumber—a saving of 52%.

It weighs 112 pounds less than the old crate.

These two items represent a saving of \$2.02 per crate.

Labor cost is reduced approximately 50%.

The structural advantages of the new crate over the old one can readily be seen: the lock corner construction makes it stronger and more rigid; the notches in the end members prevent the side play which often weakened the old crate in transit; redesigning of the side members

affords better protection to the brake drum.

Shippers who have adopted scientific crating report other advantages—of perhaps even greater importance than factory savings. It eliminates damage claims and speeds up collections. It decreases sales resistance and so gives the salesman a new selling tool. Safe packing builds good will.

THE services of Weyerhaeuser Crating Engineers are offered to executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of crating lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser Engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 South La Salle Street, Chicago; 220 Broadway, New York; Lexington Building, Baltimore; and 2694 University Ave., St. Paul; and with representatives throughout the country.



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Robert J. Merrill, Concord, New Hampshire.

National Lumber Manufacturers' Association, Central Committee on Lumber Standards, Wilson Compton.

American Forestry Association, Ovid M. Butler, Forester and Secretary.

American Automobile Association, Good Roads Department, V. D. L. Robinson, Washington, D. C., and Alfred G. Seiler, Washington, D. C.

Union League Club, Conservation Committee, Chicago, Illinois.

THE MASSACHUSETTS ASSOCIATION TOURS

For several seasons past, during the summer months, members of the Massachusetts Forestry Association and their friends have enjoyed the well-planned and delightfully-conducted tours of our most important National Parks and National Forests that have been projected and carried out under the auspices of the association.

This year there will be two distinct tours, the usual circle tour of the principal parks and the tour to the heart of Alaska and the Canadian Northwest.

The vacational character of these tours cannot be overemphasized. It means a wonderful summer out of doors in the midst of scenery of the greatest variety and beauty. It is adapted to all ages and tastes. There is ample time to rest and ample opportunity to be strenuous, according to taste. Nearly one thousand miles of the journey is made by automobile.

Descriptive literature and itineraries of the tours may be had by addressing Harris A. Reynolds, Secretary of the Massachusetts Forestry Association, 4 Joy Street, Boston, Massachusetts.

COAL COMPANY AWARDS PRIZES

The prize-winner in the Lehigh Coal and Navigation Company's school contest for a good fire slogan was Miriam Fidler, of Lansford, and the slogan that won the first grand prize was: "*Fires come—forests go; stop fires and forests grow.*" The slogan winning the second grand prize was: "*A flame, a breeze—gone, the trees,*" by Francis Kleckner, of Summit Hill.

The contest started on March 1st and ended on March 31st, and that competition and rivalry were keen is readily demonstrated when it was announced that there were 1,357 pupils competing. The co-operation of the principals and teachers of the schools was largely instrumental in making the contest a success. The educational benefits derived from such a competition are considerable, for much is accomplished in turning the young folks' thoughts to forest protection. Recently Governor Pinchot, of Pennsylvania, said: "Forestry is of greater consequence to the young people than it is to us older men, anyhow, for the coming timber scarcity is

even more threatening to them than it is to us. It will be at its worst when they are running the state and the nation."

Seven competitors were awarded a year's subscription to AMERICAN FORESTRY in recognition of their efforts.

Flowering Trees and Shrubs of the Lower Rio Grande

(Continued from page 340)

tainly the most prolific. The lavender Caracal, with its quaint dog-like blossoms, called by the Mexicans Los Perritos (little dogs), and the handsome *Cuerna de Benado* (Deer's Horn), the name of which is suggested by the two stiffly pointed buds usually to be seen on either side of the lovely orchid-tinted blossoms, should also be mentioned, as also the purple Bougainvillea, the paper flower of the Japanese.

The charming Duck Vine (*Aristolochia*), with its strange-spotted blossom, when unopened looking for all the world like a duck, and the exquisite, though non-fragrant, violet, which, climbing to the top of a tall native sour-orange tree, mingling its white and purple clusters with the golden fruit of the tree, makes a sight quite as well worth traveling the 3,000 miles to see that Burroughs attests he once made to see the common mullein cultivated in a garden and called the velvet plant.

LUNCH BAGS CARRY FIRE WARNING

The New York State Forestry Association has done a unique and telling bit of advertising in the distribution of 200,000 paper lunch bags during the forest fire season, the aim being to place a bag with every fisherman and recreationist visiting the forests during the season. On one side of these bags is printed a vigorous statement urging the protection of the woods from fire. It is admitted that the great majority of forest fires are the direct result of carelessness, because smokers, hunters, fishermen, and campers in the woods head the list as causes of fire, and so the personal co-operation of every user of the woods is urgently requested. Undoubtedly the distribution of these bags will do much to impress the individual.

LARGE PLANTING ON MINNESOTA FOREST

In the National Forests of the Rocky Mountain District of the Forest Service this year all records for planting were broken when the report was made of 4,115 acres planted. The largest single planting operation in this district was in the Minnesota

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National Forest, where 1,635 acres were planted to red pine and 95 acres to white pine. The total number of acres in this forest that have been reforested now stands at 5,606, of which 4,808 acres have passed through one or more growing seasons.

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Anyone sending in the coupon attached below ordering any two of the books here listed will be given absolutely FREE, without charge, a copy of

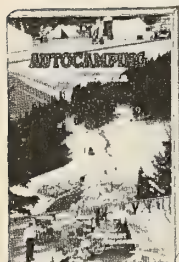
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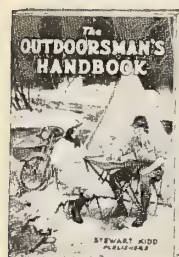


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edited by Hy. S. Watson and Capt. Paul A. Curtis, Jr.

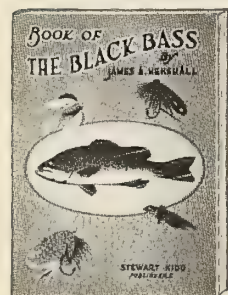


A handy reference manual of useful facts and figures on the technology of the outdoors for the hunter, angler, and wilderness traveler. Game law charts are included. Each paragraph is initiated by some well-known authority on the subject treated.

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WASHINGTON FIRE LAWS IMPROVED

Eleven important additions have been made to the forest fire laws of Washington, as the result of a bill recently passed by the state legislature. Among other things, the bill provides a penalty for the violation of any of the rules and regulations made to protect the forests of the state, and it requires all railroads operating trains through forested districts to provide speeder patrol. The bill also requires any person operating a stationary engine to clear away forest material from around the setting and to take other specific precautions against the spread of fire.

Under one provision of the bill it becomes a misdemeanor for any person, during the closed season, to throw away any lighted tobacco, cigars, cigarettes, matches, or any other lighted material in any forest region of the state. Still another provision strikes at the depredations made within recent years on young forest trees for Christmas-tree purposes, and provides a penalty for such cutting.

The legislature has also passed a reforestation measure which marks real progress in forestry. This bill provides for a State Forestry Board, consisting of the Governor as chairman, the State Land Commissioner, the Dean of the College of Forestry of the University of Washington, the Director of the Department of Conservation, and the State Forester. The board is authorized to issue public utility bonds in a sum not to exceed \$200,000 for the first biennium, the money to be used to purchase logged-off lands for reforestation purposes.

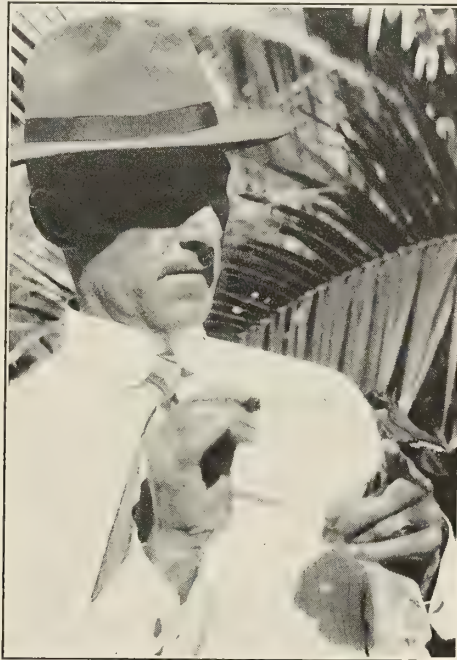
An interesting feature of this bill is one giving the board authority to designate as state forests present state-owned lands more suitable for forest growth than for other purposes, and to make rules and regulations for reforesting them. The possibilities for establishing state forests on lands now owned by the state are very great. The state owns almost 1,000,000 acres of commercial mature forests.

The Washington legislature has sent a memorial to Congress petitioning for protection for 750 thousand acres of unreserved forest lands now a part of the public domain, and for a million and a quarter acres of Indian reservation forest land which receives inadequate fire protection at the present time.

An important piece of forest fire legislation was passed by the legislature but vetoed by the Governor. The section gave the Director of Conservation and Development the power to make special rules for the protection of any region of the state which he might consider a special fire hazard. An amendment to this section, excepting certain classes of owners, caused the Governor to veto it on the ground of class legislation.

For the progress shown in forest legislation much credit is due to the State Forestry Conference, which was organized in 1921

under the auspices of the Seattle Chamber of Commerce. Dean Hugo Winkenwerder, of the College of Forestry, University of Washington, is chairman of the Forestry Committee of the Chamber's State Development Bureau, and under his supervision the Forestry Conference was organized, with seven committees appointed to study the different phases of the state's forest problems.



HAND-FED HUMMING-BIRD

Sergeant Charles Haberkorn and Orderly M. J. Maw, of the National Home for Disabled Veterans, at Sawtelle, California, believe they are the owners of the only domesticated and hand-fed humming-bird in existence. Their feathered friend is a small red-throated humming-bird that answers to the call of "Dick." Orderly Maw, who used to train birds in the tropics when he was a sailor, many years ago, suggested that they train "Dick." That they succeeded is apparent from the fact that he now takes all his meals from a medicine-dropper, either from the hands or from the teeth of his trainers. He frequently perches on their fingers while taking nourishment in the form of sweetened water or syrup from the tip of the medicine-dropper.

"The urge to active interest in our near and remote forests, the wrench from the narrow views of little inclosures, the stimulus of the sweeping currents of wind from our great reservations, should make the important work of reforestation and conservation not only richly productive in future splendid forests, but in future splendid citizens, keenly alive to all that AMERICAN FORESTRY stands for."—Abigail F. Taylor.

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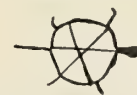
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AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

WANTED, to communicate with party interested in Forestry to act as financial partner in developing some large tract of cheap land, must have sufficient capital, would accept straight salary, large fruit or farm proposition considered. Have made this my life work and study, short course graduate, several years' experience, logging, road-making, pruning, manager 1,500 acre farm, orchard and forest combined. Address Box 4095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-23)

FORESTER—Experienced graduated forester from large middle-west university. Master of Science degree in forestry. A specialist in tree diseases. At present employed in City Forestry work in city of 140,000 inhabitants, but would like change to a larger city. Have had five years of experience in eastern, middle-west, and southern sections of the country. Would prefer southern California. Address Box 5020, care AMERICAN FORESTRY, Washington, D. C. (4-6-23)

GRADUATE FORESTER would like job in Southern Appalachians or Southern Pine Region. Four years in Forest Service. One year in France lumbering with 10th Engineers. One year in state work in fire prevention, where he is now. Has worked from Pennsylvania to Alabama and in Idaho. Some agricultural experience. Address Box 5035, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-23)

GRADUATE FORESTER with 8 years of experience, both practical and technical, in the United States and Canada. Has had charge of large logging operations, estimated large areas of timberland for both buyer and seller. Open to change of employment. Best of references furnished. Address Box 5040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-23)

WANTED—POSITION BY A FORESTER. 12 years' varied experience in northern and southern forests; ex-forest supervisor, at present secretary of forestry association. Especially competent in forest management; practical, commercial forestry; forest protection; publicity and administrative work. Desires employment by large lumber company or state forestry department. Pleasing personality, robust physique and invaluable practical experience. Address Box 5045, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-8-23)

WANTED

SOLICITOR for reputable Tree Surgery Company, vicinity of New York City. Address Box 5010, care of AMERICAN FORESTRY, Washington, D. C. (3-5-23)

EXPERT TREEMEN WANTED—We will require this year a number of experienced treemen and tree surgeons at various points throughout the eastern seaboard. Please write fully your qualifications. Address Box 5030, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-23)

A NOTABLE CONTRIBUTION TO FOREST RESEARCH

A substantial and generous endowment of \$200,000 for experimental research in forestry has just been announced. This sum is to be equally divided between the Yale School of Forestry and the Department of Forestry at Harvard. The gift is anonymous. The donor, it is stated, is deeply interested in the advance of forestry in the Northeast, and especially in New England, and the money has been granted in the belief that research and experiment in the field problems of forestry will do more than any other one thing to bring about forestry practice.

The need of forestry is now very generally recognized. Its actual practice is retarded because of the limitations of our knowledge regarding the life and growth of our trees under different conditions, and the lack of local experience in applying the methods of forestry. It is to supply the basic knowledge regarding the New England trees and forests and to enable more extensive field experiments in forest production that the generous gift of \$200,000 has been made.

The endowments have been given to Yale and Harvard because these institutions are already carrying on important work of research in connection with forests which they own or control. Yale has forest tracts in Connecticut, New Hampshire, and Vermont. The Harvard forest at Petersham, Massachusetts, constitutes a field experimental station of very great importance. Field experiments have been in progress on the Yale and Harvard forests for over fifteen years.

There are certain problems of forest research which can be worked out to a better advantage by a university than by any public agency. There are found on the technical staff of a large university men of great experience and technical knowledge. Such institutions are on a permanent basis and experiments can be carried out consistently over a considerable period of years. And a university always has the advantage of being completely independent in its selection of projects and in the conduct of its investigations.

The donor of these endowment funds to Yale and Harvard has made a contribution to forest research of very great importance, the results of which should count large in advancing the practice of forestry.

"I find AMERICAN FORESTRY very interesting to myself and other members of the family, and also have been able to use it to good advantage in my high-school class in commercial geography. It is an exceptionally attractive magazine and is doing a good work."—Sarah C. Josenhaus.



Reproduction from a painting in oil, by Frank Swift Chase, of the home of Dr. Henry Van Dyke, Princeton, N. J.

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A decaying tree cannot save itself

FEW living things are as utterly helpless, as defenseless in themselves, as the tree when it is attacked by internal decay. It can only wait to die—unless saved by human skill.

The inside of a tree is largely dormant or semi-dormant. The active growth and life are in and immediately under the bark. The wood-cells inside of a tree cannot protect themselves from disease and decay. The bark is Nature's protection. Every wound in the bark, from whatever cause, exposes the wood-cells to disease—and decay, ceaseless and progressive decay, is almost inevitable. That is why the service of Davey Tree Surgeons is essential to the health, and perhaps the life, of your trees. Like the tooth, when decay once starts, nothing but human skill can save it.

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*I open the window and make salute;
"God bless thy branches and feed thy root!"
Thou hast lived before, live after me.
Thou ancient, friendly, faithful tree."*

—Dr. Henry Van Dyke



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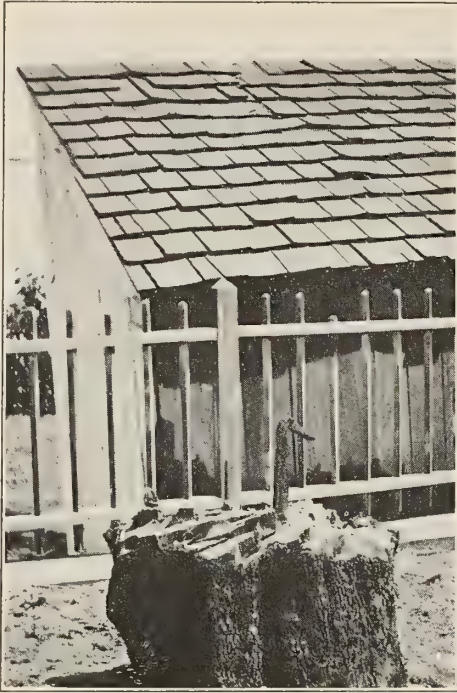
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RECORD TIMBER CUT IN CALIFORNIA

Breaking all records, the 1922 timber cut of the 17 National Forests of California climbed to 217 million board feet, an increase of 73 per cent over 1921, according to report by District Forester Paul G. Redington. Receipts in payment for this timber totaled \$663,000, or an increase of 115 per cent over the preceding year. The record sale of the year was on the Lassen National Forest, where a billion feet of timber was placed under a thirty-year contract. This was the largest timber sale made in any of the 147 National Forests of the country.

"National Forest stumpage is growing in popularity among lumber owners," said the District Forester, "principally because it can be purchased on small advanced payments and because the timber sold is protected by the Forest Service from fires; 1922 was one of our best timber-sale years, and we expect to do a bigger business in 1923. The reason for this increased cut is the exhaustion of the timber supply in other regions, combined with an active lumber market, caused by the wave of home-building that is sweeping the country."

The total cut of lumber from the National Forests of California for the ten-year period 1913 to 1922, inclusive, amounted to 934 million board feet, valued at \$2,254,000 on the stump. Twenty-five per cent of the receipts from the cut of timber are returned to the counties in which the National Forests are located, and an additional 10 per cent is expended by the Forest Service on local road and trail construction.



SCYTHER INSIDE TREE

An old pear tree was cut down in the backyard of Charles W. Quynn, of Frederick, Maryland, and in the middle of the stump of the trunk was found, very tightly wedged, an old scythe blade in a very much rusted condition.

How it got there is a mystery. It is supposed that years ago the scythe was hanging on a limb and slipped down in a hollow of the trunk, lodging in the position inside the tree near the ground, where it was discovered. The tree dates back some time before the Civil War, and, as can be seen, the scythe blade is of a type no longer used.

THE MARYLAND FIRES

Forest fires in Maryland during April and May focused widespread public attention throughout the Southeast to the menace and destructiveness of fires in the woods. Asked for a statement of the damage done in Maryland, State Forester Besley said: "The newspaper reports have exaggerated the extent of the fires. Outside of the Catoclin Mountain section, extending from the Pennsylvania line, near Pen Mar, southwest to Harpers Ferry, fire losses have not been excessive. In this section, however, where there are large continuous areas of forest land and where the sentiment against forest fires is least developed of anywhere in the state, it has been impossible for the state fire protective organization to cope with the situation adequately. This is a section rather sparsely inhabited, in which there are a number of 'squatters' and small land-owners who derive a considerable revenue from the picking of huckleberries. The fact that most of the fires which occurred this spring were of incendiary origin and were repeatedly set out while hundreds of men were fighting fires shows the difficulty of combating them.

"Added to this, the large amount of dead chestnut throughout the region, each dead tree capable of scattering fire from a hundred yards to half a mile, with a high wind blowing at the time and extremely dry condition of the leaves, together with the difficulty of securing fire-fighters, presented obstacles that could not be readily overcome.

"The District Forest Warden and a dozen fire wardens and hundreds of helpers, many of whom were pressed into service, fought fires for days against these heavy odds, and finally won out. The complete

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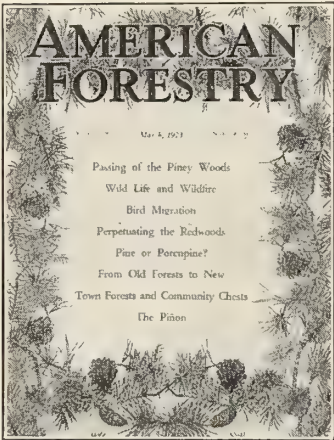
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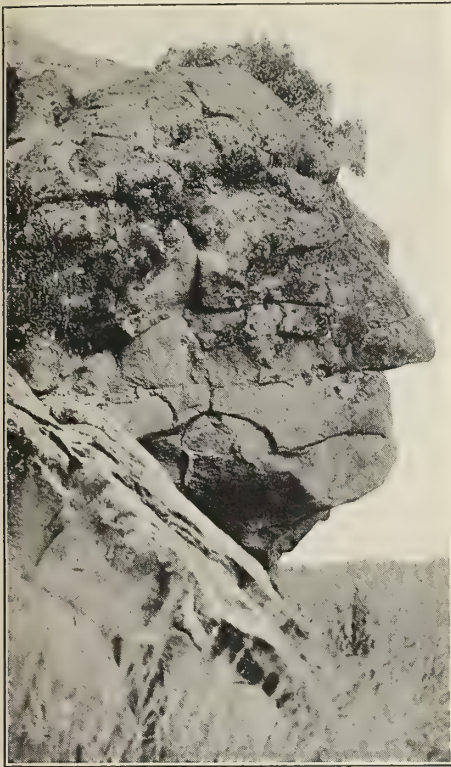
Especially interested in articles on-----



This is the only Popular National Magazine devoted to trees and forests and the use of wood.

June, 1923

reports are not all in as yet, but it is likely that in this one section 8,000 acres of woodland were burned over, with a loss of \$40,000. These fires have impressed the people of the state with the necessity of more adequate forest protection."



WASHINGTON'S PROFILE IN ROCK

Nature has shown her patriotic spirit near Chatsworth, California, where the desert meets the mountain to the north of Los Angeles. Erosion during the long ages has sculptured the "George Washington Rock," which in clear outline portrays the face of the venerated Father of His Country. It requires no keen imagination to connect the huge mass of rock, earth, and undergrowth with the stern-visaged President. This rock can be seen for many miles, as it arises abruptly out of the sagebrush and travelers journey long distances to see it.

KILN-DRYING DOUGLAS FIR COMMON LUMBER

The kiln-drying of Douglas fir common promises to become one of the most effective measures for conserving this material, by reducing the losses now occurring with air-drying and machining. A recent report of the Forest Service indicates that it is entirely practical to kiln-dry No. 1 common Douglas fir boards and dimension. Heretofore the kiln-drying of these grades has been held impractical because of the damage done to the lumber by the methods used. The present practice of lumber manufacturers is to air-dry Douglas fir common, or to ship it green. The saving to be gained in lower freight rates through ship-

ping dry lumber instead of partially wet lumber will not only greatly benefit the lumber manufacturer, but eventually the consuming public, and, moreover, will permit a wider distribution of this fine structural material, the report states.

In 1920 plants lying west of the Cascade Mountains in Oregon and Washington produced $2\frac{1}{4}$ billion feet of No. 1 common Douglas fir boards and dimension, representing more than 42 per cent of the total volume of fir cut in this region. As the local market does not absorb this amount of common lumber, it becomes necessary to find markets in the great consuming centers of the East and Middle West. The Atlantic seaboard can be supplied by cargo by way of the Panama Canal, but the Middle West is reached only by rail. Since rail charges are based on weight, each pound of water removed from the lumber actually lowers the cost of transporting the lumber to the markets.

The report is based on research done by the Forest Service in co-operation with the West Coast Lumbermen's Association at the plant of the Wheeler-Osgood Company in Tacoma.

THE WISE "OWL" WHO TURNED FOOLISH; OR, FIRE WILL OUT

Down in — lived a certain old mountaineer with a dragging step, who wore a No. 6 shoe, and he was very wise. His name was Owl. He was out of work, too. This did not worry him much. But he needed a little money for one thing or another, which caused him to scratch his head and reason thus: "Uncle Sam has plenty of money. He spends it for fire-fighters. Why not start a little blaze, then be on hand to put it out?"

The wise old Owl's little blaze was a great success from the standpoint of providing work. Fanned by a stiff breeze, it raced up the mountain side and was only extinguished by the efforts of several hundred men. It not only burned the standing timber, but destroyed all the little trees which would have made a second crop. It blackened the mountain slope for miles around, destroyed its value for water protection and recreation purposes, and cost the people of the United States many thousands of dollars. But the wise old fellow with the dragging step pocketed his share of the pay-roll, and when nothing further happened he left off worrying about being found out.

But a sharp-eyed forest ranger on the alert for "firebugs" was puzzled by the tracks left by a No. 6 shoe propelled by a dragging step. It had zigzagged about in a most suspicious manner, with no apparent destination. It took a whole year to work up the case, but when confronted with the facts Mr. Owl "blew up" and confessed his little scheme to provide himself with pocket money.

The judge said: "Five hundred dollars fine." "I guess that is pretty high," murmured the wise (?) old Owl. "Ah," replied the judge, "but I have the last guess."

HOUGH'S AMERICAN WOODS

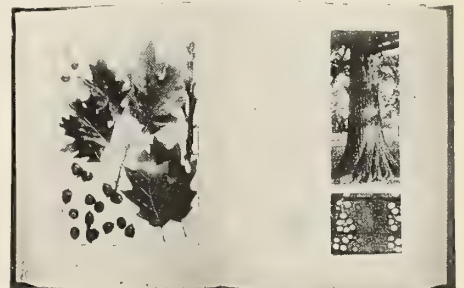
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"I think the magazine is the best I have ever read."—*De Forest Marchbanks.*

"You are very much to be congratulated on the excellent matter which you are bringing out in AMERICAN FORESTRY and on the way in which the magazine is now being conducted."—*Prof. Ralph S. Hosmer.*

"We all enjoy AMERICAN FORESTRY greatly."—*Nelson G. McCrea.*

"Pleased to see the general change in character of your magazine. Best of luck."—*A. O. La Monte.*

"The magazine is better than it has ever been since I began taking it. May it continue to prosper."—*Caroline C. Dorman.*

"I am anxious to see AMERICAN FORESTRY every month."—*Archie W. Budd.*

"I certainly do enjoy AMERICAN FORESTRY and wish you every success."—*Mrs. James Hendrickson.*

"It is very gratifying to note a marked improvement in general in the AMERICAN FORESTRY MAGAZINE. I hope that the financial support is keeping step with the added effort made necessary to bring about the improvement."—*Solan L. Parkes.*

"The March number is one of the best the Association has issued."—*Dr. Henry S. Drinker.*

"Let me congratulate you on your success with the magazine, especially the May number, which I have just read. I think it is one of the best that has been issued."—*C. F. Quincy.*

"Mr. Carhart's article on 'What Do Tourists Want,' in the April number of AMERICAN FORESTRY is timely and valuable, since shortly the recreational world will go a-riding and the answer to this question will be foremost in the minds of the hosts that crowd the roads."—*Flora Snyder Black.*

"I consider the magazine, AMERICAN FORESTRY, one of the very best I read, and shall never want to be without it. It is of great value in connection with my Boy Scout work, and each number is read and reread many times."—*D. C. Bartley.*

"I hope that you will succeed in bringing your magazine before all lumbermen."—*F. B. Goebel, O'Neil Lumber Co.*

"AMERICAN FORESTRY is one of the best magazines our library gets."—*Charles Henry Butler.*

"Wishing success to your very valuable magazine always."—*Oscar Dinwiddie.*

BOY SCOUTS FIGHT MARYLAND FIRES

An interesting report has been received from Benjamin Tarshes, Assistant Scoutmaster and Troop Service Officer of Troop 73, Boy Scouts of America, with regard to the participation of "The Troop with a Backbone" in combating the recent forest fires which burned so fiercely at Four Corners, Maryland, in April. It seems that Troop 63 was in camp on the Woodrow Wilson Reservation at Burnt Mills, Maryland, when they received a telephone call asking for help to fight the fire at Four Corners. Assistant Scoutmaster Stuart immediately notified Troop 73, and the two troops formed fighting brigades, the Red, White, and Blue, for work under different leaders. The troops had to march a distance of three miles before they reached the fire. After an hour's hard fighting, it looked as though the fire were under control and Troop 63 and the Fire Department left for home. Then the fire broke out anew and Troop 73 had several hours of hard and fierce fighting before it was conquered. Fire Chief Watson, of the Washington Fire Department, and Major Daniel Sullivan, of the Police Department, and the District Commissioners expressed earnest and grateful appreciation of the conspicuous service of the Boy Scouts in meeting this emergency.

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VOLUME 29

July, 1923

NUMBER 355

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American Newspaper Publishers' Assn.

ELBERT F. BALDWIN, 1923—New Jersey
Editor, The Outlook Magazine

ROBERT P. BASS, 1924—New Hampshire
Ex-Governor of New Hampshire

NELSON C. BROWN, 1923—New York
Forestry Instructor, Syracuse University

F. W. BESLEY, 1925—Maryland
State Forester of Maryland

W. B. GREELEY, 1926—District of Columbia
United States Forester

GEORGE S. LONG, 1927—Washington
National Lumber Manufacturers' Association

GEORGE HEWITT MYERS, 1923—Washington, D. C.

GEORGE D. PRATT, 1927—New York
Former New York Commissioner of Conservation

JOSEPH HYDE PRATT, 1923—North Carolina
North Carolina Geological Survey

GEORGE W. SISSON, Jr., 1925—New York
American Paper and Pulp Assn.

E. A. STERLING, 1926—New York
Forest Engineer

J. R. SWIFT, 1923—Pennsylvania

WM. P. WHARTON, 1923—Massachusetts
Director, Massachusetts Forestry Association

WHAT THE ASSOCIATION IS WORKING FOR

ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in co-operation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production; more extensive PLANTING OF TREES by individuals, companies, municipalities, states and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND, REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNAL FORESTS.

FOREST RECREATION as a growing need in the

social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

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L. M. CROMELIN, Assistant Editor

Vol. 29

JULY, 1923

No. 355

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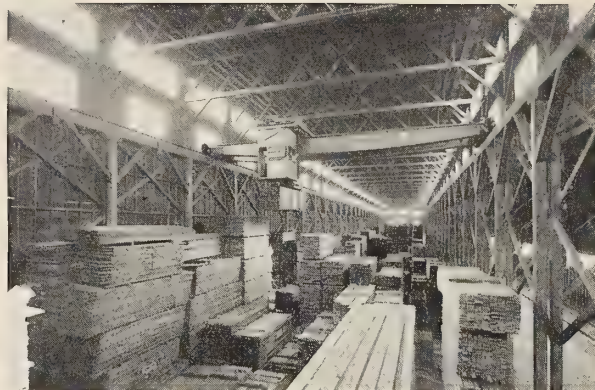
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The loading platform at one of the Weyerhaeuser mills. It is such up-to-date facilities as this that enable this group of mills to give efficient handling to orders of any size.



The unit package shed at one of the Weyerhaeuser distributing yards from which emergency shipments can be made on twenty-four hours' notice—an important feature of modern lumber service.

Why So Many Industrial Concerns Are Utilizing Weyerhaeuser Lumber Service

WHEN an old, established lumber organization finds its sales to industrial users increase threefold in a few years, there must be sound fundamental reasons for the growth that are of interest to all wood-using industrial concerns.

Several years ago the Weyerhaeuser organization made a comprehensive survey of the lumber needs of American industries. The results of this survey, coupled with more than sixty years' experience in the lumber business, led to a definite service policy in meeting industrial lumber requirements.

This service has two basic factors:

FIRST—to find the kind and type of lumber and the grade of lumber that will meet a manufacturer's requirements most efficiently and economically.

SECOND—to assure a group of permanent customers a continuous and uniform supply of the exact type of lumber in the correct grade, size and quantities they require.

SUCH a dependable lumber service enables a manufacturer definitely to standardize his lumber practices and factory operation. Continuous production is assured. There is no unnecessary wastage. Handling costs are reduced. In short, the manufacturer is relieved of his lumber worries. The expert in lumber works with his experts to produce maximum results.

Weyerhaeuser sales to industrial users have shown phenomenal increases because Weyerhaeuser service fills a real need—because con-

cerns who have utilized the service find that it pays.

This high type of lumber service is made possible because of the timber resources, specialized equipment and highly trained personnel of the Weyerhaeuser organization:

A large supply of mature timber of fifteen different species, and many types within these species, sufficient for decades of cutting.

Scores of logging camps guaranteeing a steady stream of suitable raw material.

Fifteen complete modern manufacturing units.

Seasoning processes that prepare lumber scientifically for each exacting need.

A crew of men at all the plants, with years of experience in producing, grading and shipping Weyerhaeuser quality lumber.

A corps of salesmen trained to think as purchasing agents and buyers have wished for lumber sellers to think.

Distributing facilities backed by fifteen immense mill stocks and two great strategically located storage plants, in the heart of both the eastern and mid-western markets.

THE Weyerhaeuser Sales Company distributes Weyerhaeuser Forest Products through the established trade channels. Its principal office is in Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 2694 University Ave., St. Paul; and with representatives throughout the country.

The personal service of Weyerhaeuser crating engineers in helping buyers of crating lumber to reduce their packing and shipping costs is outlined in a booklet, "Better Crating," sent free on request.



WEYERHAEUSER FOREST PRODUCTS SAINT PAUL • MINNESOTA

Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



AMERICAN FORESTRY

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In the Name of Development

BY P. S. LOVEJOY

IN the summer of 1905 we students of forestry were making maps and reports of the little patches of stumps and brush which had been designated "State Forests" in Michigan. One of our bushwhackers was a native. While always personally pleasant about it, he frequently informed us that the whole thing (meaning the State Forests) "would go belly-up like a fish inside two years."

His father operated a sand farm in the vicinity. Our bushwhacker, like almost all the natives and local editors, knew very certainly that the whole region would soon be farmed; also that there was timber enough to last forever. To talk about "raising" timber was utter bunk; timber was to be logged out, not raised. Besides, it was actually wrong, improper, and unfair to take the state's tax-reverted lands out of circulation and thereby prevent poor men from taking up homesteads. He believed all that.

During the holidays of 1906 three of us were up in the fast-disappearing pine camps getting growth measurements on big pine before it should be too late. Christmas night the crew was very drunk and the bunk-house was crowded. During the evening a lumber-jack with sunflower whiskers expressed the idea that the college boys

ought to be killed. "Bald-Faced Forest Reservers," he called us, and it appeared that we were responsible for preventing great numbers of good citizens from acquiring the homesteads to which they were justly entitled. He seemed sincere, too.

In 1907 I was in the Forest Service, stationed near Butte. Every few days the Butte and Denver papers would red-ink their headlines again with tales of "hardy prospectors" and "toil-worn homesteaders" "run out of the reserves" by dastardly forest rangers. In Congress the same charges were frequent and violent, evidently because they could be depended upon to attract sympathetic attention and required little or no supporting evidence of fact in order to be effective.

By 1911 I was stationed on Puget Sound.

While he swept out the office the janitor complained at length that we had prevented the "development" of the region. He had sold his "homestead" to a timber speculator, he said, and now had cash to take up a timber and stone claim; but the one he wanted was inside the National Forest. An outrage!

One day a nice old gentleman dropped in to get acquainted and to tell a story. A few years before, he said, he had been checking records in the court-house and had



THE HIGHROAD TO DEVELOPMENT!

A logging road into the last of a heavy stand of timber in the Lake States. "In the name of development, cut the timber and make room for farms," has been a land boomer's maxim; but in Michigan alone it would take 380 years, at the present rate of actual farm development, to settle the cut-over lands.

overheard the making of plans for circulating petitions which were calculated to "open" the Olympic National Forest "for agricultural purposes." Knowing that fraud was contemplated, he had reported the circumstances to Washington, the old gentleman said, but nevertheless a big piece of the National Forest had been "opened."

I was able to supplement his information. Some 600,000 acres of very heavy timber had been "opened," had been "homesteaded" at once, and had now passed into the hands of a half dozen lumber concerns. At the time patents had issued, about 500 acres of the 600,000 had been in actual cultivation. Now, there were great and fast-growing areas of burnt-over stump land perfectly idle.

THE PROMISED LAND OF HOH RIVER

In 1911 the supervisor's office was deluged with applications for "June 11 homesteads" in the Hoh River valley. To reach that land one took an all-day boat from Seattle, then a stage for some 20 miles, then a puncheon trail for another 20 miles, and so reached the last settler's place. One then followed elk trails through vine-maple tangles and in half a day more reached the desired lands. Men demanded their "rights" to these lands, and, unless prevented, would have taken women and children into that place.

To reach that interior jungle one passed hundreds of square miles of logged-off, burned-over land, with good soil and with rail or water transportation already available. That land was utterly idle; held by lumbermen at some \$50 an acre in the rough.

That fall a candidate for state land commissioner ran for office on the slogan: "Tax stumps, not cows." Almost within sight of that town began the edge of the great devastation and desolation which was all that now remained of the 600,000 acres of National Forest which had been "opened for agricultural development."

HILL-BILLY FARMS AND BUMBLE-BEE COTTON

In 1918 I was stationed in Memphis and introduced to the "Alluvial Empire" in the Mississippi delta. Certain marvelous and bonanza farm and plantation development was impending, it appeared, and a mere \$50 or so an acre was cheap indeed. Millions of acres of glorious cotton, corn, and alfalfa were about to spring up where now I could see only vast and very dreary mosquito flats covered with stumps, brush, and brambles. That the soil and climate were as described, one could hardly doubt, but that the passing of every sawmill—and they were passing rapidly—would certainly be followed at once by



THE HOH RIVER COUNTRY FROM AN AIRPLANE

On the plea of opening the Olympic National Forest for agricultural purposes, Mr. Lovejoy declares, some 600,000 acres of heavy timberland were eliminated. Although twenty years have passed, settlement somehow has not yet made much progress.

the arrival of three cotton gins and sixty silos was not wholly evident to the stranger. Meanwhile the South had timber to burn! I saw them burning it—good gum and oak logs; good young pine, too, on the uplands. There also I saw enormous stretches of ragged scrub forest full of big stumps, and punctured here and there with hill-billy farms raising “bumble-bee” cotton—cotton so short that a bumble-bee can keep his hind legs on the ground and reach the blossoms.

Finally, I was back in Michigan again, “teaching forestry” and wondering why our men could locate more easily in Idaho and Borneo than in Michigan, with its ten million acres of idle stump land. Back in the Roosevelt-Pinchot days we had seemed to be making fast progress, but now we appeared to be just about deadheaded. Why? And was this not the title for a proper thesis—one of those campus undertakings called a “research”? It seemed to me that an investigation of the factors which had caused forestry to bog down might be interesting, even though of doubtful precedent.

The Michigan State Forestry Association once had nearly a thousand members, and now it had only a hundred. Various noisy shake-ups had made changes in personnel, but few changes in policy. The fire, forest, and land affairs of the state were without policy. Both the Agricultural College and the University has schools of forestry and both owned considerable areas of idle stump land; but neither had even a pleasant smile for the other, neither was doing anything with its timberland, and neither had any intimate relations with the administration of state forest and timberland affairs.

Some 600,000 acres of land had reverted to the state for non-payment of taxes. A lot more seemed to be on the way. Under the law, the state must maintain at least 200,000 acres of state forests. At the current rate of planting, it would take a hundred years to get those cull

lands into some sort of production. As a professor of forestry, from one year's end to another I neither saw nor heard from a lumberman or woodlot owner.

WHAT HAD DEADHEADED FORESTRY

Meanwhile nearly a third of the state was unproductive and in ragged brush and charred stumps. The area of idle land had been growing steadily and fast for at least thirty years. Meanwhile the state's industries were im-

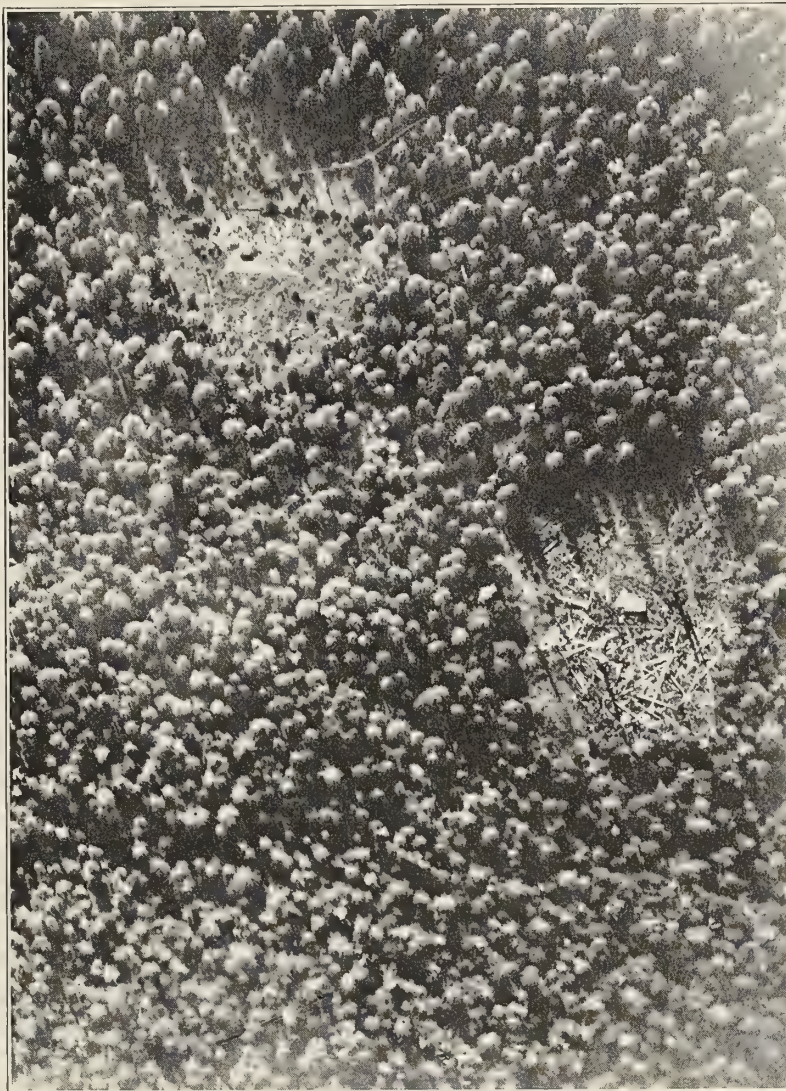
porting enormous quantities of forest products; but nobody in the state knew or cared how much; and meanwhile we taught new crops of foresters and sent them to Idaho, Borneo, or Arkansas, but not one upstate into those millions of acres of virgin forest or into that ten million acres of ex-forest.

A curious situation, certainly; more curious still, as it seemed to me, nobody had inquired as to the detail of the occasions or prospected the paradox. We foresters were all dressed up and no place to go. Here we were, with tens of millions of acres of idle forest land almost in sight, with a certain shortage of forest products already in evidence, full of silvicultural and other technique, and nobody would give us a chance to grow timber.

We couldn't grow timber until somebody

gave us control of timberland and funds to work with. Where the state had inadvertently acquired much timberland through defaulted tax dues, it was providing funds hardly adequate for a satisfactory experiment in fire protection and nursery practice. As to fire protection, we foresters were told to run along and tend to our business, if we had any.

But everybody in the state, surely, had now heard of “forestry” and at least had an inkling of its logic and procedure. But somehow “forestry” hadn't been able to sell itself, except to a few woman's clubs and a stray citizen here and there, who seemed to exhaust his pep



CABINS IN THE CLEARINGS

Flying over the Hoh River country, one can see here and there a cabin in the wilderness. Looks like there is plenty of room for neighbors.

with the payment of dollar-a-year dues in the moribund Forestry Association. So we were deadheaded. But why? Just exactly what had deadheaded us? Knowing that, perhaps, we might get loose and going. Otherwise we seemed deadheaded until some economic freshet should wash us into the channel again. The concept seemed excellent. But how could one personally get into the U p p e r Peninsula of Michigan while a professor of forestry attached to the State University?

It wasn't so hard

ming sheep, I was shown endless miles of pine-land sedge and sweet-fern, alleged to be fine sheep feed; and I was also shown whole townships of self-sown red clover standing between pine stumps and unused save by an occasional deer.

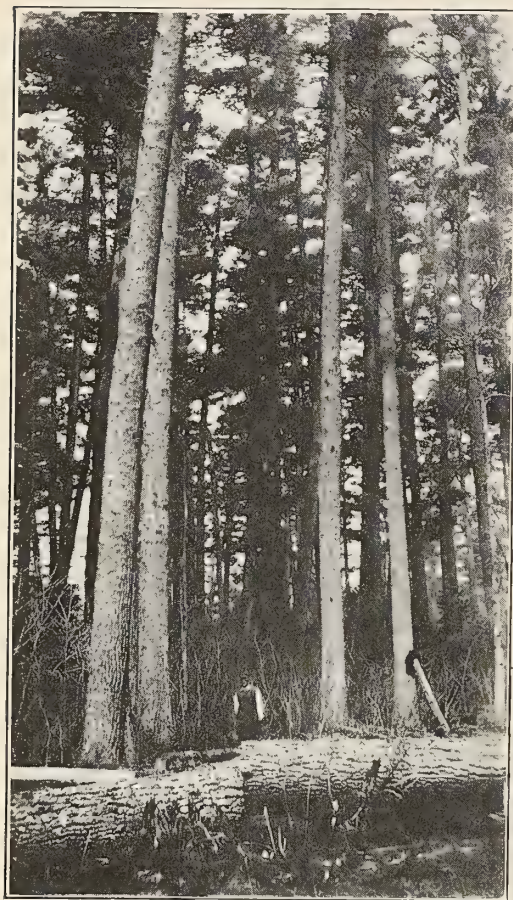
The secretaries of chambers of commerce, the Rotarians, the real-estate salesmen, development associations and bureaus, experiment station and immigration officials, even lumbermen and fire wardens, made me welcome and showed me everything—or, anyway, nearly everything. When they seemed to miss something I could always go back *incog.* and look it over. They showed me silver linings and sweet clover, sunflower silage and pea-hay and alfalfa; Finns and Polanders with their women barefooted in the fields; real homes and thriving farms and towns coming up out of the wrecks of logging camps; farms and whole settlements starving out or utterly abandoned—all manner of interesting things—a virgin pine, even, now and then. But, of necessity, what I saw most of, as I traveled upper Michigan, Wisconsin, and Minnesota, were brushy wastes of scrub, fire-weed forests, bleached snags and charred stumps. That's all there is in three-quarters of that country.

Carefully concealing my erstwhile interest in forests, I kept prospecting the minds of my new friends, the real-

estate salesmen, the lumbermen landlords, development association secretaries, experiment-station workers and immigration officials, editors and all the

A NEW SETTLER CARVING A HOME OUT OF STUMP LAND IN NORTHERN WISCONSIN

IN THE LAST LARGE STAND OF CORK PINE IN WISCONSIN



after all, and, twiddling my fingers at the College of Literature, Science, and the Fine Arts and camouflaged as a reporter for the oldest agricultural journal in the world, I was presently traveling the northern cut-overs, listening to the boomers boom.

OUT WHERE THE BOOMERS BOOM

It was another grazing boom, in 1919, and rather feverish. The western ranges were dry and the northern cut-overs had genuine hopes of selling a lot of land for ranching purposes. Saying nothing of having once supervised the grazing of some hundred thousand head of Wyo-



ALTHOUGH ONE OF THE MOST PROGRESSIVE STATES IN LAND DEVELOPMENT, WISCONSIN NOW HAS SOME 13 MILLION ACRES OF IDLE CUT-OVER LAND—AN AREA WHICH EXCEEDS ALL THE IMPROVED FARM LAND IN THE STATE

other types of cut-over country leaders. What did they really accept as facts? What did they think of their country and its present and future? What were they trying to do, and how were they succeeding with it? Where, if at all, did they relate crops of timber to their scheme of economics? And what relation or ratio was to be expected between farm and forest land, when the situation should finally be worked out?

THE PASSING OF THE FOREST A MATTER OF COURSE

Without exception, they all seemed to accept their remaining forests, their camps and mills, their enormous expanses of idle cut-over land and the ownership and operation of these things exactly as they did their copper and iron mines. Did some forty outfits own a fifth of all Michigan? Did one concern own 14 per cent of the Upper Peninsula? Well, what of it?

I traveled at length with a development association secretary. Fires were everywhere, but he was taking no more account of them than of other passing clouds. He did not know the common trees apart; was quite astonished to see for himself that the "brush" being consumed by

the fires was, in fact, chiefly young maple and birch and Norway pine. That such growth might have intimate relations with game and fur and "tourist traffic," in which he was much interested, seemed never to have occurred to him. Until he had scraped with a stick and seen it for himself, forest humus was an abstraction and its destruction by fire wholly hypothetical and of no possible importance.

That the logging camps had gotten too far ahead of the settlers he, of course, admitted; therefore the development agencies and so forth. But with the exhaustion of the virgin prairies and with our increasing population, soon a great influx of new land-buying settlers was assured. Advertising would direct them to these very favored lands. Wasn't that the case? . . . He had never thought to check up farm-land affairs in the census. He accepted, utterly and without question, the notion that good agricultural soil in good climate *must* soon be in demand at, say, \$10 an acre and up—mostly up. . . . This was a university man, well informed, thoroughly

right-minded. He cared and cared a lot. But he *didn't know*. The deliberate protection, cultivation, and orderly harvesting of forest crops had no more place in his scheme of things than did bananas or oysters. When first suggested, the idea startled him. When it became evident that there was no implied derogation of *bona fide* farm-land development—indeed, that farm and forest development must parallel each other if the maximum of land utilization was to be had—the concept actually pleased him and seemed reasonable; but, for the present, not to be mentioned in too public a way.

THE RIGHT HAND OF WELCOME

Then there were the small fry along Main Street, contentedly taking their facts and their formulæ second and third hand and reciting the orthodox slogans as certainly as a phonograph plays its record: "This is a great farming country."

"We're developing very fast." "I've an extra nice piece of land I can let you have at a bargain." . . .

To these gentry anything which might assist in selling land was highly praiseworthy—and *vice versa*. To them the transfer of land titles was proof of prosperity, and



THE DAY OF A GRAZING BOOM

The western ranges were dry and the land boomers sold these northern cut-overs as sheep range; but after one summer the sheep did not come back. But in Michigan 600,000 acres of cut-over lands have come back to the state for non-payment of taxes.

"development" was the god before whose altars all their prayers and offerings were laid. In all this they were perfectly sincere and almost religiously illusioned. Having somewhat comprehended something wrong with current economics, over in Wisconsin they had evolved a perfect creed and code for their kind: "Half a brick for the lumberjack and the right hand of welcome for the settler," the hand, of course, involving a fountain pen and a dotted line along with the welcome.

The logic of it all was straight enough. For these communities to prosper, now that the lumber industry was going or gone, some other industry must be developed. The only new industry in sight was agriculture, including grazing, on a pinch. Therefore *get settlers; sell land to outsiders*.

This necessity and psychology had, of course, played right into the hands of the professional boomers and land sharks. The promoters had gone to astonishing lengths. In some states the immigration officials had been virtually or actually in collusion with the boomers,

and utterly and outrageously misleading land-selling literature had been issued under state seal. Meanwhile various decent agricultural authorities, as at the agricultural colleges and experiment stations, had been cowed and miserably buffaloeed, and for so long that they had become almost shameless about it.

This situation had become notorious. In 1920 the Bureau of Land Economics of the U. S. Department of Agriculture undertook a field check on the methods and results of cut-over country colonization. Political pressure was at once brought to bear in an effort to stop the work. It went on, but publication of the results is still strangely delayed. Timidity? Intimidation? Expediency? Accident? The boomers have, no doubt, ruined more families than did the Germans in Belgium, and in the name of "development"!

However that may be, it is sober fact that among the citizens of the northern cut-over districts, now aggregating an area of some 40,000,000 acres, the crop possibilities of huckleberries could be depended upon to arouse immediate interest or enthusiasm where similar mention of the crop possibilities of pine was received as a joke in very poor taste, or, if insisted upon, brought shocked shuddering.

"DON'T MIND THE SMOKE;
OBSERVE OUR RUTABAGAS"

The visit of an uncredentialed western ranchman set the whole district agog and clacking, but a 10,000-acre fire or a town packed into box-cars and ready to abandon homes to the ubiquitous smoke was accepted as a mere temporary discomfort or nuisance. And kindly to observe our rutabagas. Are they not excellent rutabagas?

No agricultural fantasy seemed to be too extreme to be acceptable. My inquiry as to the prospects for a tomato canning factory on the shores of Lake Superior was seriously accepted and debated. The promoter of a sheep ranch showed me a pile of rye straw, a pile of oak and popple brush cut with the leaves on, and a field of yet hypothetical turnips—"winter feed" for the several thousand head of sheep now out on the wintergreen and sweet-fern "ranges." He showed me, also, literature in

which was a picture of the "ranch" headquarters, sign and all, and with a professor of animal husbandry from the state university standing prominently in the foreground—and prominently named in print.

The thing was astounding, preposterous beyond all words. But there it was, a dominant illusion, developed and protected and defended with fanatic, though often genuine, enthusiasm. And withal, of course, it had its solid aspects, for here and there, and constantly, new and permanent and prosperous homes and farms and settle-

ments were actually coming up out of the brushy wastes of idle land. On the experiment station plots were real and excellent crops. And had not the farms of the Ohio Valley been carved and worried out from even worse jungles? Good soils in good climate, and with good location and transportation, were actually here—by the millions of acres. No possible argument as to that.

But neither could there be reasonable argument as to the great and growing disparity between successful settlement and the areas of "potentially" agricultural land now lying idle; nor as to the still greater areas of dubious or certainly non-agricultural soils and locations. Reasonable or not, there was such argument—violent assertion and denial, rather than argument, perhaps, but always violent. They were going to farm it *all*, and *soon*; so they said and so they believed.

Hesitatingly, when

coaxed, now and then somebody would admit the legitimacy of woodlots on the farms and farm-to-be; but forests, really considerable areas of land used for the production of wood? Absolutely not!

If it were then suggested that it might prove a case of timber or nothing, one stood convicted of being a knocker. While the State Director of Immigration had been running agricultural exhibits at the corn-belt fairs, tempting farmers to the northern cut-overs, back at home the State Forester had been running another picture show, urging that the fires be stopped and that state forests be created and developed in the sand-and-lake districts. They had blown that State Forester and all



JACK PINE IN WISCONSIN

This forest of pines, which has sprung up on an abandoned field, does not bear out the farmer boys' "schoolin'," that timber is to be logged, not raised.

his works right off the map, the immigration official told me, righteous fire in his eye and speaking in the manner of the safely saved who have caught and burned their heretics.

MEANWHILE THE CUT-OVERS STALK AHEAD

Meanwhile, in the three Lake States, during 40 years and more, the area of cut and burned-over lands had been increasing, until it now amounted to more than all of Michigan. In the south other cut and burned-over forest lands now aggregated some three times that area, and still grew apace. There was something like a quarter billion acres of such ex-forest land in the nation now,



EVIDENCE OF A GRIM
STRUGGLE FOR A
HOME—AND FAILURE

and perhaps 90 million acres so devastated that it would take artificial planting to get it into forest again.

In spite of all the artificial stimulation given to agricultural development, the net total of the stump lands was increasing by about five million acres a year—as much as all of Massachusetts. Shortage in essential forest products had become perfectly evident and certain to become very much worse.

Moreover, the new census showed that in some twenty states there had been an actual shrinkage in the area of improved farm land, and that this shrinkage was spreading steadily from the older into the newer regions. In all previous census reports Michigan had gained greatly in the number of its farms; during the years 1910-1920 it had lost 10,500 farms, and average farm-land values were shrinking, too. Poor hemlock at Detroit now cost as much as southern pine, shipped a thousand miles, and Pacific Coast fir was a direct competitor of both. Freight

on imported lumber was costing as much or more than the cost of growing good timber at home, where we had a full ten million acres of idle timberland. . . . What a very queer reading this chapter will make, some time!

PINE MAST ON PILGRIM FATHER FARMS

In New England they had an even more unsane combination. There they seemed to have grown used to the idea of failing farms, and now accepted idle forest land as some sort of economic dispensation, hardly to be questioned or trifled with.

In the fifty miles between Bunker Hill and Plymouth Rock, self-seeded on Pilgrim Father farms, was more thrifty white pine than one could see in a thousand miles travel through the ex-pineries of Michigan or Wisconsin. The Miles

MISGUIDED DEVELOPMENT IN
THE NORTHERN CUT-OVERS
PRODUCES NEITHER PERMA-
NENT HOMES NOR PERMA-
NENT FORESTS



Standish Monument was almost obscured in second, third, or fourth-growth white pine. New England white pine, half grown and knotty, found ready market at \$10 or \$20 on the stump.

But between Albany and Boston were weary and dreary hours with nothing in sight but scrub birch and oak and occasional pines; yet fire signs were everywhere. At the agricultural colleges they were teaching old-line corn-belt agriculture and giving more time to chicken food and berries than to pine and spruce. With the income from woodlot products beginning to rate along with hay and dairy products, state directors of agricultural extension had never heard that Smith-Lever funds were available for demonstrations of woodlot management; they seemed disgusted to learn of that. Occasional county agents, observing greater chances for ser-

[Continued on page 447]

The Smoky Trail

BY JULIUS ANSGAR LARSEN

THE remote mountains and vast forest areas of the West, which for centuries have been the sanctuaries of big game, the paradise of trappers, prospectors, and Indian hunters, have during the past ten or twelve years witnessed a bustling new life and activity in the energetic forest fire control organization of the United States Forest Service.

Peaks and ridges which in the dim distances loomed inaccessible, bleak, and forbidding may now have a lonely lookout tower or cabin, which is linked to civilization by seemingly endless, tortuous trails and telephone lines, because they are excellent points from which to discover and locate forest fires. The building up of a forest fire control organization requires the eagle-nest lookout cabins and the mile after mile of galvanized wire, for it must be in direct communication with the ranger headquarters, nearer civilization, where stores of food, fire-fighting tools, emergency men, and pack-mules stand ready to rush in and attack the fires.

Along the trails one sees cabins, bridges, ferries, tents, camp grounds, fire warnings, trail crews of bearded young men and brawny lumberjacks, caravans of pack animals, and all the paraphernalia of a busy forest fire protective organization.

Though forest fires have raged long before the white man crossed the Continental Divide, it is only within the last two decades that he has come sufficiently close to one of these terrors to realize its stupendous sweep and power, its lightning-like destructiveness, and its ruinous effect on stream-flow and timber-supply.

In the Clearwater Mountains, in northern Idaho, one old-time trapper and prospector, who is now employed by the Forest Service, told me that one conflagration laid waste, in three hours, ten or twelve townships of some

of the best forests in the West. Practically all of it within the brief space of three hours!

No one who has not heard or seen a real forest fire will ever imagine its force and fury. When the roaring inferno comes, the very air seems to explode and burn. The noise is like forty fast freight trains crossing as many high trestles. Trees which stood through centuries of storm are uprooted and tossed about like so many tooth-picks! Nothing lives in its wake. Trees, vegetation, game, everything dies. It is the end of the world and of creation in the forest—Doomsday!

What can man do with this raging monster? The answer is, he must not allow it to grow into a monster.

Hence, all this preparedness, and, above all, the lookout man, who scans the long, green slopes, the winding canyons and distant peaks, for small columns of smoke—the result of lightning or the smouldering log left by a careless camper.

Who are the men who do this work? The permanent organization on a for-



THE VERY FIRST TYPE OF FIRE LOOKOUT—A CRUDE TABLE AND FINDER ON A HIGH POINT, SOMETIMES USED IN INACCESSIBLE REGIONS EVEN NOW

est unit, like the Clearwater National Forest, which covers one thousand four hundred square miles of the nation's most precious resources, consists of six to eight men—the supervisor, a bundle of energy and nerves; a forest clerk, who handles his correspondence and accounts, and several forest rangers, each in charge of a section of country larger than ten or twelve Prussian National Forests.

The ranger is a very ordinary-looking individual, without sombrero, bandanna, and six-shooter, but with a resolute eye and a step and speech which carry finality and conviction. During the fire season his position is that of a master engineer. He sets the machinery in motion, and sees to it that it is well oiled and works efficiently.

In the summer, beginning June 1 or later, the extra

men are put on—lookouts, “smoke-chasers,” patrolmen, trail crews, carpenters, cooks, packers with mules, and commissary men who function as storekeepers at the ranger headquarters. There are thin-whiskered forestry students in army shirts, who do anything except the heavier construction work; brawny lumberjacks with overalls and a profusion of snuff, whose ax work is as sure as the surgeon’s scalpel; veteran old-timers in an odor of Peerless tobacco, cocksure of game habits, signs, and seasons, and impatient of the theorizing student; the packer in chaps, broad-rimmed hat, wristlets, and bolster, who adds a touch of the old West to this life, and whose chief difficulty is in preventing the mules from leaving the scant fare of mountain sedges and scampering back to the ranger station in the night. When a real fire occurs, then comes the fire-fighter, the man who wields the grub hoe and spade—twenty, forty, sixty of them, from all parts of the continent, sweating along the “horribly long” trail—each man in overalls, but with as many varieties of coats as unshaven faces. Each wears a brass tag—an assurance that if caught in the flame he will not be an “unknown dead.”

But the fire-fighter is not the only man who faces danger and death. Accidents, often fatal, overtake the men in their work out of reach of help. On a trip from Scurvey Mountain to Cook Mountain one packer was lifted bodily out of the saddle by a low hanging telephone wire and thrown on his back over a fallen snag, where he lay for an hour. Luckily,



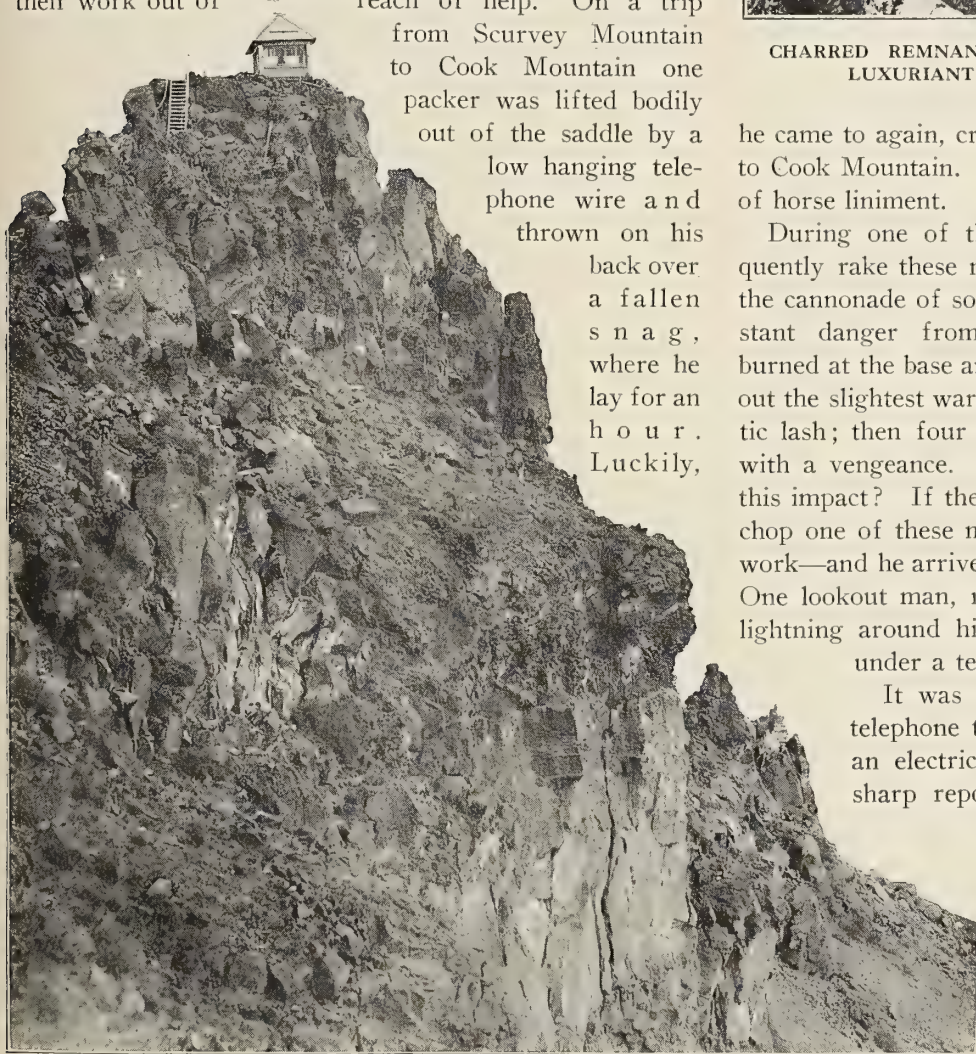
CHARRED REMNANTS OF THE ONCE BEAUTIFUL AND LUXURIANT FOREST—DESTROYED BY FIRE

he came to again, crawled on the horse, and made it back to Cook Mountain. Here he received several applications of horse liniment.

During one of the violent thunderstorms which frequently rake these mountains, and which reverberate like the cannonade of so many sixteen-pounders, there is constant danger from falling trees. Trees which have burned at the base and have rotted often crash down without the slightest warning. There is a swish as of a gigantic lash; then four or five tons of wood hit the ground with a vengeance. What is a man and his horse under this impact? If the tree blocks the trail; the packer must chop one of these monsters in two—at least half a day’s work—and he arrives in camp long after dark and supper. One lookout man, rather than face the constant play of lightning around his cabin, spent the night huddled up under a tent, out in the dark and pelting rain.

It was necessary for a lonely fire guard to telephone to ranger headquarters at the time of an electrical storm. There was a flash and a sharp report; he passed into unconsciousness, but recovered after half an hour—with two lame arms. The telephone line was no more. A quarter mile of it had disappeared—vaporized. Further on he found the end—a tangled mass of wire resembling the bed spring recovered from ash heaps of a burned home.

The smoke-chaser’s job in a sea-



THE LONELY LOOKOUT TOWER UP NEAR THE TOP O' THE WORLD, FROM WHICH THE ALERT OBSERVER IS ENABLED TO KEEP A SHARP WATCHOUT FOR THE LITTLE CURL OR WISP OF GRAY SMOKE WHICH TELLS OF THE PRESENCE OF FIRE



THE TRAVELER THROUGH THE NATIONAL FORESTS INVARIABLY HAS HIS CURIOSITY AROUSED BY THE SIGHT OF LOCKED BOXES OR KIOSKS, SECURELY PLACED. TO MANY THE CONTENTS ARE A SEALED SECRET, BUT THIS PICTURE IS AN OPEN SESAME, REVEALING THE FIRE-FIGHTER'S EMERGENCY KIT

son like 1910 or 1919 allows no time for loneliness. To reach a fire, he starts out alone over the untrodden wilds, carrying ax, shovel, blanket, and emergency provisions for a day or two. By the time he reaches the fire he is usually worn out and in a welter of sweat; but the fire, if it is true to the species, spreads, and he must scratch, chop, and dig for a day or more without rest. If he cannot check the blaze single-handed, four or five men start for the fire with pack animals. To reach it they must literally chop and saw their way in order to get the animals through.

But the summer life in the mountains is not without touches of humor or relaxation. On many lookout stations young forestry students must do their own cooking, washing, and housekeeping. Most of them have never cooked their own food, but somewhere on the circuit is a sourdough artist or ex-chef. They ring him up, and from forty miles away over the mountains and treetops comes the recipe for hot biscuits, sometimes with a joker in it, of course, which is revealed later when the kick is registered. These pranks are taken in good spirit.

While at Cook Mountain, two huskies who had just returned from a fire wrestled a three-round bout on the Alpine greensward, in the twilight, nine thousand feet above sea-level. On July 4th ice cream was made by using snow and ice still lingering on the north side of the mountain. Opportunities are not wanting at times for a musical trio or a "Timber-line Quartet."

Two men who said they hailed from New York—a doctor and a lawyer, they said—wanted to make it across the Bitterroots on foot along the route of Lewis and Clark to see the grave of the Indian boy, and the spot where the party of 1808 nearly succumbed from hunger and cold. Footsore, they returned to Musselshell Ranger Station. One evening there, at dusk, they came in haste and out of breath from their bath out by the stream, clothes on their arms. They said there was a growling monster of a black bear that wanted to eat them. On inquiry about the bear I learned that it was two forestry students under a bear hide.

The animals, too, seem to feel the isolation and look for diversion. The pack-mule "Midget," who usually kicks around impatiently until the pack is off, and gets her lump of sugar, stole into the cook shack and devoured twenty pounds of sweet chocolate. After that she developed an insatiable sweet tooth and came daily to the cabin door for sugar or chocolate. They tried to break her and whittled down a bar of soap, coating it with chocolate, and fed it to her, but Midget did not realize what it was and came back for more.

The long mountain trail is not without a touch of interest and its own peculiar attractions. It winds through magnificent forests of cedar, pine, and spruce which rise like so many fluted cathedral columns above a checkered carpet of ferns, lilies, moss, and dogwood; it leads over a boisterous mountain stream; it hugs the precipitous slope of a cool and deep canyon; clings to promontories which afford a look into the seething caldron of the river hundreds of feet below; it leads



THE PACK STRING EN ROUTE TO A FIRE. AT A HEADQUARTERS EVER ALERT, STORES OF GRUB, FIRE-FIGHTING TOOLS, EMERGENCY MEN, AND PACK HORSES AND MULES STAND READY TO RUSH IN AND ATTACK FIRE IN ANSWER TO A CALL



A MODERN LOOKOUT. THE MATERIAL FOR THIS BUILDING WAS PACKED ON HORSES TO AN ELEVATION OF 4,000 FEET ABOVE THE RANGER STATION

away from this to the trickling side stream overhung with graceful ferns or blushing violets; then loses itself in the river, reappears on the opposite bank and climbs two thousand feet into the air by well-graded switch-backs until the river below looks like a silver ribbon threaded in green fabric. It is now up in the higher country, where the sky-line is bounded by a panorama of mountains which stand immutable in their eternal loneliness of blue and white. Pot Mountain itself fairly jumps into view in all its cryptic mysteries.

One feature peculiar to these trails is the Forest Service signs, placed there to remind travelers of the necessity of care with fire. These read as follows:

Help Prevent Forest Fires.

Fire in the Mountains Means Poverty in the Valleys.

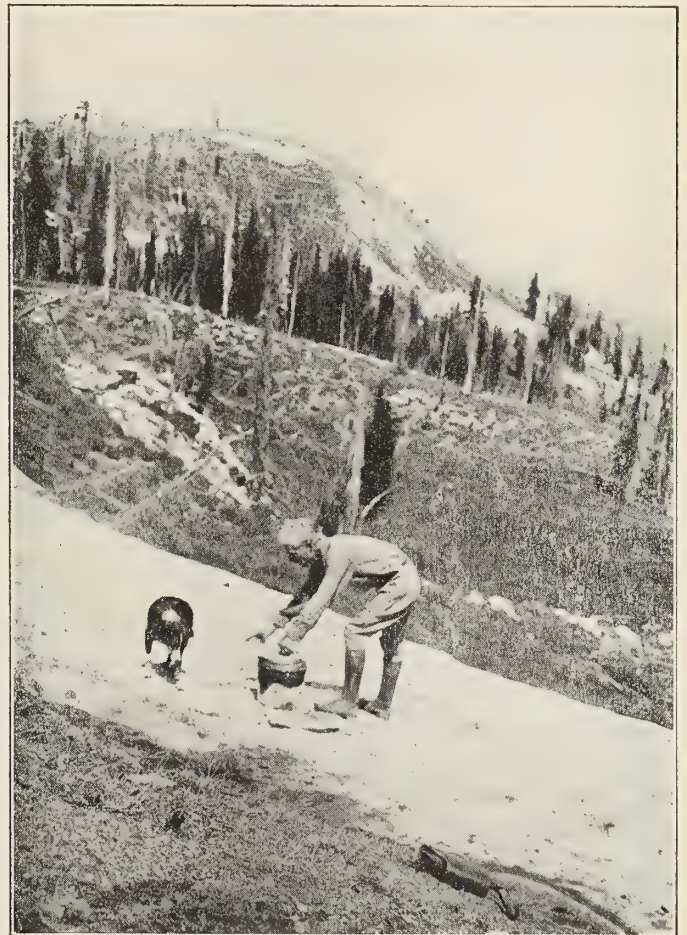
Forest Fires Ruin Fishing and Hunting.

Don't Drop Your Lighted Match or Cigarette.

Cook Mountain Lookout, seventy miles from the railroad and nine thousand feet above sea-level, is a wind-swept baldness fringed with Alpine fir and mountain hemlock. Once on its top, the first impression is of being in a gigantic Zeppelin. In the middle of the open flat rock is a log cabin, storehouse, sleeping tent, and a 100-foot tall lookout tower surmounted by the United States flag. Here were one lookout man, a cook, and a

packer, an old trapper, a young forestry student, and two smoke-chasers. Every rock crevice seemed to boast of a flower or a shrub found only at these high elevations. Two hundred yards below the cabin an ice-cold spring gushes out from the very rock. The pool made here is overhung by gorgeously colored flowers which reflect in the still, crystal waters. On one slope of this mountain one may look down into an amphitheater of unusual proportions. The stage itself, a rich green velvet lawn, all in serene solitude, is surrounded with jagged pinnacles of red rock and spire-like green firs. A true bear garden! But the most wonderful is the sunrise! The first indication of dawn comes over the sky-line like the faint glimmer from a distant but powerful lighthouse—cold and gray at first, but soon of a warmer yellow and orange, and finally rich, pure gold. Meanwhile the mysterious blue and purple veil hanging over the deep canyons dissolves, and it is day.

The men who do this work love the grandeur of God's wonderful outdoors. When they feel the isolation from human society, Nature comes so much closer. They face dangers as bravely as the earlier frontier men. They know that their work will be appreciated by future Americans.



ONE OF THE REAL PLEASURES OF A RANGER'S LIFE—THE TASTE OF ICE CREAM MADE ON A SNOW BANK ON COOK MOUNTAIN ON JULY 4TH, THE "GLORIOUS" AND USUALLY GLORIOUSLY HOT FOURTH IN THE HEART OF CIVILIZATION

Forest People

WITH this issue, AMERICAN FORESTRY introduces "Forest People," a column devoted to real men and women who are doing original, interesting, and worth-while things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell readers of AMERICAN FORESTRY about them. Manuscripts should not exceed 700 or 800 words, and, if acceptable, will be paid for.

Ben Lily, A Twentieth Century Daniel Boone

BY FREDERIC WINN

WHEN Theodore Roosevelt was on a bear hunt in the cane brakes in Louisiana in 1907 he wrote a letter home to his children in which the following paragraph appears:

"There is a white hunter, Ben Lily, who has just joined us who is a really remarkable character. He literally lives in the woods. He joined us early this morning, with one dog. He has tramped for twenty-four hours through the woods without food or water and has slept a couple of hours in a crooked tree, like a wild turkey. He has a mild, gentle face, blue eyes, and a full beard; he is a religious fanatic and is as hardy as a bear or elk, literally caring nothing at all for fatigue and exposure, which we couldn't stand at all. He doesn't seem to consider the twenty-four hours' trip he has just made any more than I should a half hour's walk before breakfast. He quotes the preacher Talmage continually."

Today Ben Lily is still Ben Lily of the Great Out of Doors, as active and hardy as when 15 years ago he made a forced march through the woods to meet the President of the United States. Ben Lily is a remarkable character. Turn back the hands of time one hundred years, to when the Indians and the buffalo roamed the West, and Ben Lily would take his place with such famous adventurers and frontiersmen as Daniel Boone, Davy Crockett, and Kit Carson.

Born in the cane-brake region of Louisiana 68 years ago, Ben Lily shouldered rifle and pack and began a remarkable career as a hunter and naturalist. During the summers he may be found by chance anywhere in the West from northern Idaho to the Rio Grande, provided you are a frequenter of the back country. In recent years Ben Lily has spent most of the winter months in southwestern New Mexico, hunting mountain lions on the ranges of the great G. O. S. Cattle Company near Silver

City. He has disposed of over 400 mountain lions in Arizona, New Mexico, and Texas, and his knowledge of the habits and haunts of these wily marauders of live stock and game is probably not exceeded by any other hunter or naturalist in the world.

In spite of his age, Ben Lily can still follow a trail over the moun-

tain ranges with a 50-pound pack slung over his back. Once on the trail of a mountain lion or bear, he can average twenty miles a day at a pace which will tire the hardest of younger sportsmen. Although he may be out for weeks at a time, in regions in which no human habitations exist, Ben Lily is never lost. On these journeys he carries all his food and shelter, such as it is, on his back, and in addition such trifles as a horn, rifle, ammunition, ax, and hunting knife. The last-named weapon he invariably manufactures himself from an old horseshoe rasp or file. Trailing at his feet, excepting when the trail of a mountain



BEN LILY—READY TO GO

lion has been picked up, are his hounds—an essential part of the Lily equipment. Where Ben Lily goes, his hounds go.

On his rare trips to the settlements, which are usually cow towns nestling in the foothills or mountains, although at rare intervals he visits some metropolis, such as Denver or Kansas City, there is no more picturesque figure than that of this hardy frontiersman, carrying his horn, rifle, and packs and trailed by his constant companions—three, four, or five hounds. Ben Lily has innumerable friends and no enemies. Because of his natural, unaffected manners, he is at home wherever he goes. This truly remarkable frontiersman, with mild blue eyes, kindly mien, and sturdy frame, is wholly unspoiled. One of the fascinating traits of his character is his devotion to the Almighty and his observance of the Sabbath Day. Regardless of how hot the trail or in what locality of the wilderness he may find himself, he stops in his tracks on the Lord's Day and makes no move to resume his activities until the following Monday. He uses no tobacco, liquor, coffee, or tea. Ben Lily fears nothing excepting hell, and in that he is a firm believer.

The United States Government has used Ben Lily, when-

ever his services were available, in its war on the extermination of predatory animals infesting the live-stock ranges of the West. It is said that he has saved the live-stock growers at least a half million dollars. The Smithsonian Institution employed him for years collecting specimens and notes on the wild creatures of the woods and forests. At one time he spent three years in Mexico on this work. The number of bears which Ben Lily has killed will probably never be known, for he has hunted bears in the cane brakes of Mississippi and Louisiana, the high Sierras of Mexico, and in Arizona, New Mexico, California, and Idaho.

Wealthy sportsmen have sought him out and begged for his services as guide and hunter, but to these requests Ben Lily usually returns a negative answer, for he is pre-eminently an individualist and a man accustomed to the silences of the wide open spaces. He never sleeps under a roof unless forced to do so. The accompanying photograph was taken at headquarters ranch of the G. O. S. Cattle Company. Ben Lily was within 200 yards of a fine ranch-house, but, true to his nature, he was camping under the trees, preparing his own meals, and sleeping out under the stars.

Listening In, Mr. Luther Sets a Pine-masted Sail

BY M. W. STRUTHERS

IT WOULD not occur to the average hard-headed business man to count grains of sand, but the figures of one Thomas C. Luther, of Saratoga, New York, known locally as plain Tommy Luther, show that it can be done with unmistakable profit. Mr. Luther has shifted the little grains to his own profit and to public benefit, in a manner farsighted, yet with the deftness of the professional, so that he alone knows and counts the amount of time, labor, and care expended and the public sees, computes, and perhaps envies the results.

Twenty or thirty years ago the sands around Saratoga Lake were indeed burning. Today in place of barren acres of sand are rows and rows of green treelings, growing sturdily up into pines, where a century before their piney forebears stood. In the several ancestral decades when there seemed to be an endless supply of pine, the order of the day was to "take what was wanted," and when the ax had taken its toll for buildings, firewood, barns, and fuel, fire followed and greedily took the rest. Forests rapidly shrank to woodlots, woodlots to a defiant group of trees here and there, and these groups to solitary trees, doing duty as an interpolation in a fence that happened to come straggling in its path.

A few far-sighted men foresaw a forestless future; but trees took too long to grow. At Albany, Ithaca, and Syracuse little groups of men were fighting a battle to halt waste and to plant forests. Tommy Luther listened in and then began buying land. He bought it quietly, and for almost nothing, as it was truly barren land and nothing would grow on it, the owners said. Soon he had

[Continued on page 448]



"HEAD 'ER SOUTHEAST!" T. C. LUTHER SETS HIS COURSE

Michigan, Onward!

BY HAROLD TITUS

MICHIGAN people, as a rule, are proud of their state, as most people are proud of the land which gave them birth; but Michigan conservationists have in the past been somewhat less enthusiastic over the household goings-on in their commonwealth than the general run of the population.

However, things have changed. Men who have worked and argued and lobbied in vain through a generation are blinking and rubbing their eyes. Men who have complained sourly that conservation in Michigan was all conversation are commencing to grin. After years of marking time, Michigan has started forward, the ball is rolling, and if the state takes advantage of its present opportunities she will set a pace toward the rehabilitation of her denuded forest areas which will make skeptics point with pride and other earnest states want to follow her example.

With her once unexcelled pineries gone, her hardwoods melting like snow in April; with one-third of her area in non-producing cut-over; with fires annually licking up volunteer growth and impoverishing the soil; with land sharks selling to unsuspecting settlers tracts that are fit only for a forest crop; with whole counties footing their administrative bills by burdening their few remaining acres of timber to a point which justifies butchery; with no one knowing what she had in the way of young forests or forest sites, the Wolverine state has indeed been in a sorry way.

But in the 1923 legislature things happened. Two forestry conferences were called by the Department of Conservation in 1922, the result of which was a determination by the Conservation Commission to train its guns on two big objectives: the absolute control of forest fires and relief from burdensome taxation for the owners of cut-over lands, so that reforestation by individuals and corporations might be encouraged.

As a result, instead of having an appropriation of less than \$100,000 to spend on the annual fight against forest fire, as it has had in the past, Michigan has \$450,000 to go into this work for the next two years, in addition to the \$24,000 yearly which it may expect from the Federal Government under the Weeks Law. This is a distinct achievement, a triumph. It means equipment—towers and tools and means of communication; it means a fire-fighting organization such as Michigan has never had.

With this money available, the archaic law which designated township supervisors as local fire wardens was repealed, and in place of these officials, a few of whom worked well, but many of whom were not exactly assets, full-time deputies will patrol the state.

That for fire.

Then the Commission tackled the bugbear of taxation. It's a long story. Several bills were drafted and mangled and made useless, and then, almost between days, a bill was framed, introduced, and passed which quite takes the breath. To be sure, the Timberland Tax Bill was later vetoed by Governor Groesbeck; but even so, the action

of the legislature indicates a startling awakening on the part of the representatives of the people.

The tax problem has done more than any other influence to alienate the public from a movement for reforestation. The Governor's veto was a great disappointment to many; but, while temporarily discouraging, it is not a permanent setback. Forest tax reform is coming. It may take us several years to get it, but we have made a long start and reached the last trench.

A chance to stop fire and real progress toward relief from overburdening taxation—so much was accomplished.

But the work did not stop there.

In 1922 the state commenced an operation which is essential to a sound forest policy when it began what is called a Land Economic Survey. A crew of experts spent the summer mapping Charlevoix County so thoroughly, so clearly, that a child can look at those colored charts and know what is grown on the hills of Charlevoix, what grew there once, what types of soil are found, what areas are suited for agriculture and what are best adapted for reforestation; what farms have been abandoned, and why; what the streams offer in water-power and fish, and what the cover offers in game and fur. In fact, all that any one interested in going to Charlevoix County for any commercial or recreational purpose might want to know is readily available.

Michigan wanted to carry on this work; the legislature refused. But yet today a crew is in Ogemaw County continuing the survey and will be in Antrim County before the season is over. How the Department of Conservation worked its wonders to perform, I do not know. The money came from somewhere, and this all-important inventory of Michigan's resources is going on.

A few other things:

A land certification bill, aimed to regulate the sale of land for agricultural purposes in Michigan, drive out the land shark, keep farmers on fertile soil, and withhold distinctly forest sites for the day.

An enabling act which will encourage the Federal Government to come into Michigan and purchase and exchange lands under most favorable circumstances for the creation of national forests within the state.

So Michigan moves!

For one who has grown to maturity as the forests of his state have melted, who has watched various state administrations blunder and evade, who has wept and cursed at disappointment, who has heard the voices of sound-thinking men crying alone in this wilderness of deteriorating cut-overs, these things mean much. They are not flashy gestures, they may not impress the novice or the layman, but to the conservationist they are fundamental and essential, and, above all, these achievements indicate what may be accomplished by vigorous effort.

Woe, now, to any state administration which fails to keep on its toes and with its shoulder to the big ball!

Fly and Spinner

BY ARTHUR H. CARHART

The season for fresh fish stories has arrived

"BERT, you straighten up the cabin and I'll take these two fellows out to fish," said Fred James.

Ranger Bert agreed; so two of us squatted in the canoe, while Fred maneuvered the dancing bark through the rapids below Basswood Falls. We had reached the Crooked Lake ranger station by early midday, traveling by rail speeder over a logging railroad and by canoe. We had left Ely, Minnesota, the headquarters of the Superior National Forest, at the beginning of foggy daybreak. Lunch had been eaten in the cabin not fifty yards from where the falls somersaulted into the lake.

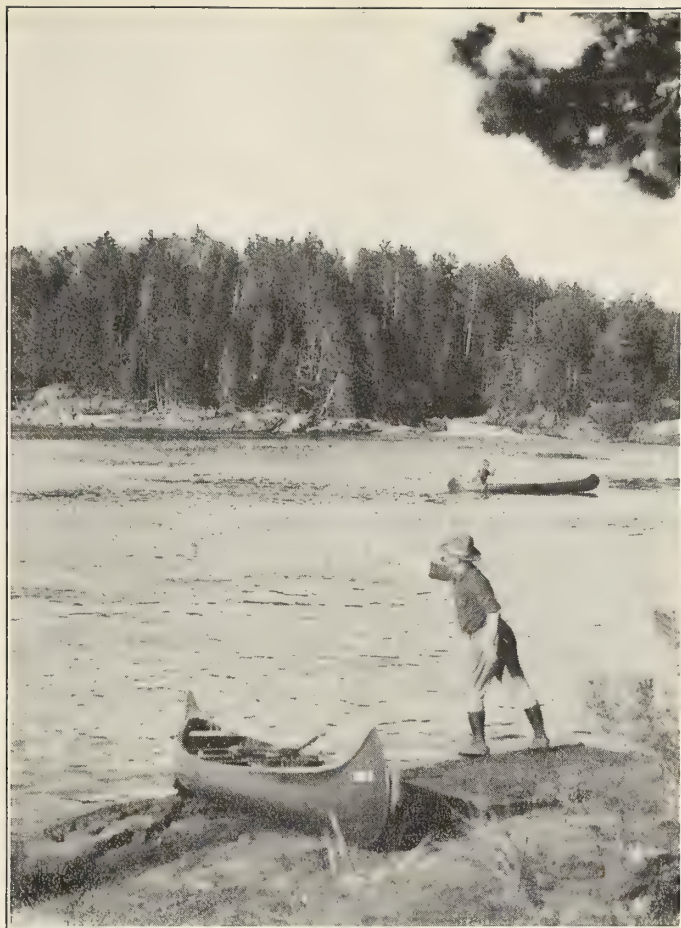
"Say, how deep—," I started to say as I pitched the bright spoon-hook over the side of the canoe.

That sentence was never completed. The fish that came after the bait looked like a lithe alligator. The big, ugly jaws snapped over the barbs of the hook before it was three feet under the surface.

Then there followed fifteen minutes of excitement. Around the boat, to the bottom of the lake, into the swirling rapids, deep into the holes near the foot of the falls, and up to ruffle the water on the surface, raced the big fish. Finally the brute came near enough for the gaff. A moment later it was thrashing around in the bottom of the canoe, threatening to throw the whole expedition into the waters.

This was only an eight-pound northern pike, but after catching seven- or eight-inch brook trout for some years before visiting the Superior Forest fishing grounds, such a fish looks like a whale.

If there is one place in our national reservations where there are big fresh-water game fish, it is in the Superior National Forest. They are no abbreviated minnows,



CASTING FOR PIKE IN CROOKED LAKE, NEAR THE RANGER STATION OF THE SAME NAME

which have to be put through a stretching process to make them legal in length.

The best fishing in the Superior is back in the interior of the forest, where there are virgin fishing waters. A quarter of a million acres of lakes and streams are in the forest and they all are full of fish. All kinds seem ready to bite. If one family is not hungry, others will be ready to feed. After traveling several hundred miles by water



WOULD A STRING LIKE THIS TEMPT YOU?

routes of the Superior and eating fresh fish for practically every bit of meat, I do not recall one time when it was not possible to get fish for food in fifteen minutes or less.

There is a variety of fishing in the Superior. In Snow-bank Lake there are land-locked salmon that often attain fifteen or twenty pounds in weight. They are fighters, and stout tackle is necessary to catch them. In some of the streams there are many brook trout which snap at the daintiest fly. In practically every large lake there is the fighting northern pike. Pickerel lurk in the reedy edges of lake and stream, while under the swirl at the foot of any falls or at the edge of rapids there are the delicious wall-eye pike. Whitefish, sturgeon, lake trout, and bass are there, too. An angler can try almost every conceivable sort of fishing in the region.

"What do you use for bait?" was asked a man familiar with fishing in the forest.

"Well," replied the experienced one, "that is hard to answer. I believe you could tie a pair of ice tongs on a one-inch rope, bait it with a turkey, and get something out of these lakes. Any sort of a spinner will attract pickerel and northern pike. A plain spoon-hook is good. For lake trout, use a nickeled spoon-hook of large size, with a pure-white bucktail. I've caught wall-eye pike on

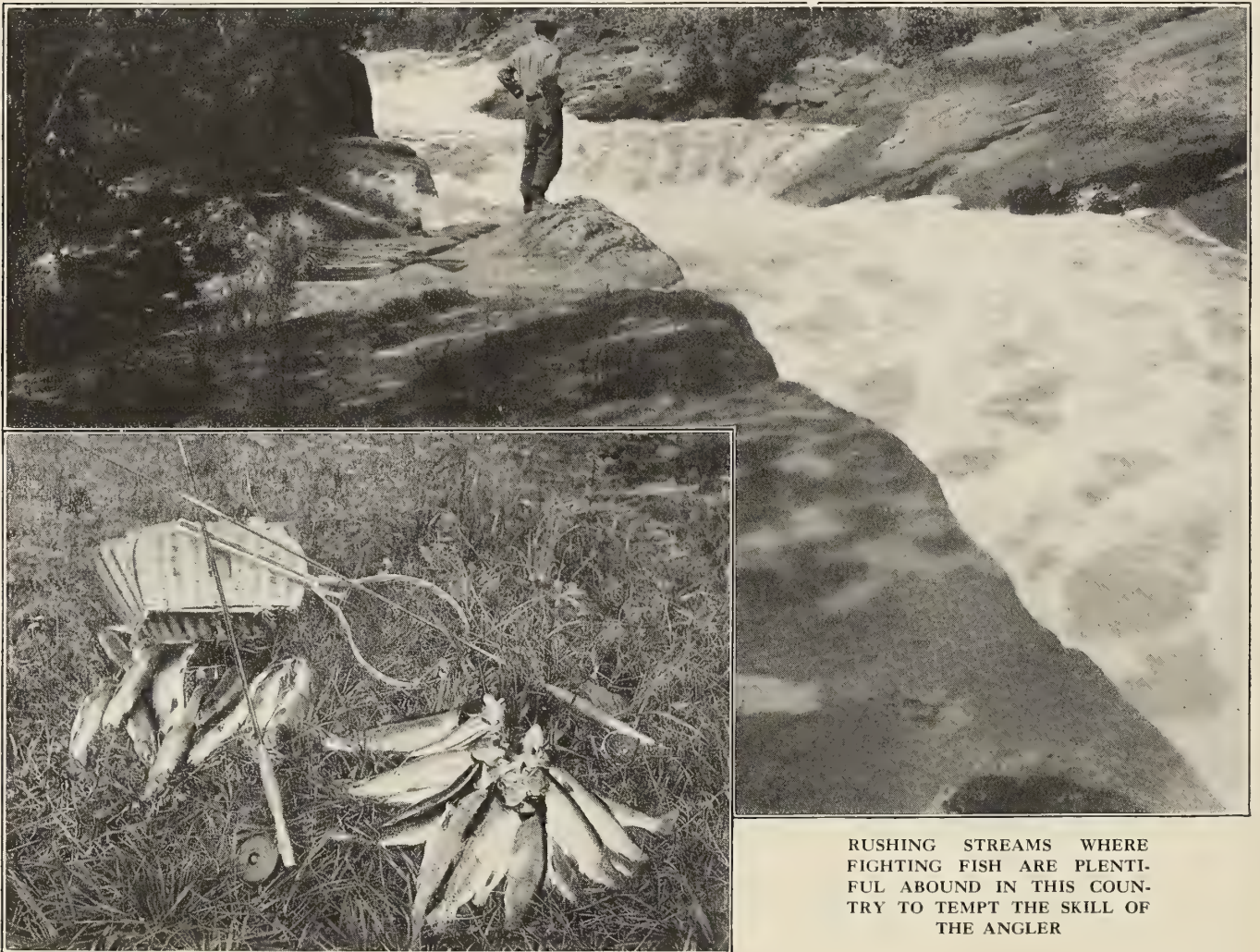
different baits, but minnows are best. A white artificial minnow, with a red head, will get them, too. The Indians catch the sturgeon and whitefish with little dough balls. Whatever you use, you'll get something in this country."

One night our party sat in camp on lovely Lac la Croix. It was so still we could hear the rumble of Rebecca Falls, about eight miles distant. Of a sudden the stillness was punctured by a splashing "kerplunk," which sounded like a full-grown bull moose had leaped from a cliff into deep water.

"What was that?" I asked.

"Sturgeon jumping," answered our guide. "It was a big one. Sometimes they get to be over a hundred pounds in the larger lakes."

Fish stories come true in the Superior. In sharp contrast to this fishing is that found in the forest streams of our western states. Practically every bit of the mountain land of the West is in national reservations. Every future hope of the angler who stalks the canny trout in his home lair of crystal mountain streams centers in a rational, active program for handling the fish resource of these public possessions. Extensive public fishing and like hunting must be found in these properties in the future or not at all.



RUSHING STREAMS WHERE FIGHTING FISH ARE PLENTIFUL ABOUND IN THIS COUNTRY TO TEMPT THE SKILL OF THE ANGLER

THE ANGLER HAS STALKED THE CANNY TROUT TO HIS HOME LAIR IN THE CRYSTAL WATERS, AND THIS IS THE RESULT—A TYPICAL CATCH FROM A WESTERN MOUNTAIN STREAM

There are thousands of places where trout fishing is good in the West, but there are not many places where the auto road has penetrated that the fish supply and natural replacement has kept pace with the demands. A new road opens up a new stream. The fishing is excellent. Streams beside older roads are stripped of their fish life. Eager anglers flock to the new Mecca. A year passes. Phenomenal catches are made. Another year ends and the new stream has become threadbare, as far as fishing is concerned. But by that time there is a new road and a new stream to be fished, and with the opening of the highway the gutting process of the undepleted fishing waters starts, continuing rapidly to the point where that stream has no good fishing left.

There are two solutions of this problem. One is to keep auto roads far enough away from many good fishing grounds, so there will always be good fishing for those who will make the effort to reach them. The more sensible method to follow is "farming" the fish resource in every possible fish-supporting water. Many more hatcheries are needed, more retaining ponds are a necessity; thorough study of all waters should be undertaken as rapidly as possible, and then these stocked so an optimum population of fish will be present. Closed seasons should be declared on certain streams or sections of streams, as the necessity arises.

Heretofore this whole question has been considered strictly of local concern. Fish and game are property of the states in which they happen to be. With the advent of the transcontinental auto tourist and the greater movement for recreational use of our public forest lands, this problem becomes national in importance, and



IN THE QUIET WATERS OF SILVER LAKE, ON THE MONO FOREST



THE FINEST MOUNTAIN FISHING WATERS ARE FOUND IN THE NATIONAL FORESTS OF CALIFORNIA, AND THE DISCIPLE OF IZAAK WALTON IS ALWAYS WELCOME



UNSURPASSED FISHING IS FOUND IN THE LAKES ALONG THE RIDGE OF THE SIERRAS

whether we live in New York, Indiana, New Mexico, California, or any other section of the United States, we must give this question thought and insist that the best handling of the game-fish resource be undertaken to insure a future supply.

There are now many places in the western mountains where fishing is very good. No better trout waters are found in the Rocky Mountains than in Trappers Lake, on the White River National Forest. It is reached either by pack or by automobile and hiking. The auto road ends within less than a half mile from the lake's edge. The lake is magnificent. It contains many trout, and it is not uncommon to have two fish on the line at one time if there are two flies on the leader. This calls for some patience in landing both, as they act for all the world like one might suppose a pair of unbroken broncos would behave if hitched in tandem to a flashy high-wheeled trap.

The Forest Supervisor at Glenwood Springs can give information regarding this unexcelled trout lake. Whether you are going by auto through historic Meeker, where one of the last bloody massacres of the West was enacted, or by pack-horse outfit from some point on the railway, he can offer up-to-the-minute advice. But do not ask him to guarantee that the fish will bite. No one can do that for trout. They are as notional as the proverbial prima donna.

The Gunnison River and its tributaries are famous as fishing streams. A great number of prize-winning catches have been made here. The fighting rainbow is the supreme trout of the stream. Natives, brook and brown trout, are there too. The Forest Supervisor at Gunnison, Colorado, or the Chamber of Commerce will gladly give information regarding the region of the Gunnison.

All other western states have ideal fishing streams and lakes.

Mr. John D. Guthrie, Assistant District Forester at Portland, Oregon, describes the fishing possibilities of Oregon and Washington as follows:

"I am not exaggerating when I say that it would be far easier to give a map showing where there is *not* good fishing than otherwise. There are fish in practically every lake and stream in the Cascade range, in both Oregon and Washington. Good, easily accessible fishing places in Oregon are the McKenzie River, Clackamas, Santiam, Metolius, Umpqua, and Rogue rivers, and Crater, Elk, Odell, and other lakes.

"In Washington, Noosack, Skagit, Skykomish, Snoqualmie, Lewis, White, Klickitat, Naches, Wenatchee, Soleduck, Quenault, and other rivers, and lakes Chelan, Cle Elum, and many others.

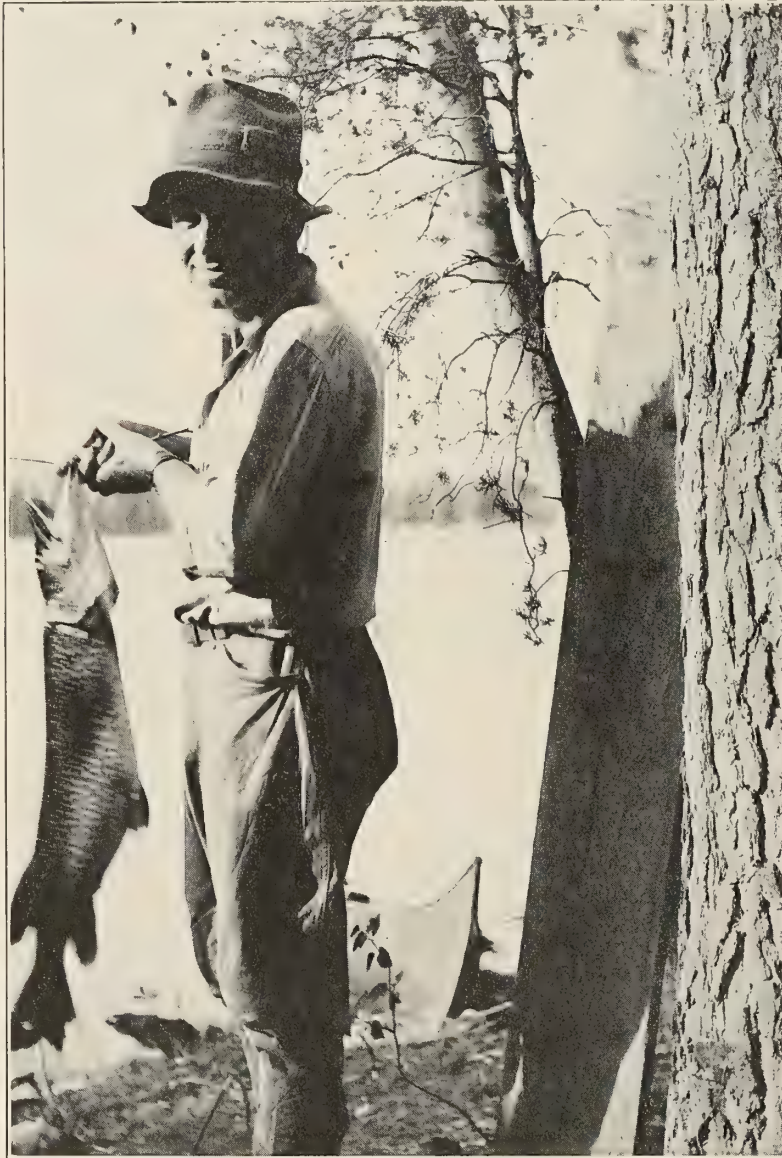
"This is all too general; but so is fishing in these two states."

So there you are assured of fishing in the Pacific Northwest. It is all good in the mountain streams; so make your choice.

Assistant District Forester L. A. Barrett, of San Francisco, believes that California has as good fishing areas as can be found anywhere. He gives the following information regarding one of the best sections for fishermen who visit California. He says:

"Adjacent to Mono Lake, on the Mono Forest, is one of the finest fishing grounds in America. On Rush

Creek, Reverse Creek, and Leevining Creek, all of which empty into Mono Lake, are found a string of lakes that furnish fishing galore. Grant Lake, situated on Rush Creek, about four miles above Mono Lake, is one of the best-stocked lakes in the West. A few miles above is Silver Lake, home of the Loch Leven trout. From the Forest Service public camp ground at Silver Lake several interesting side trips may be made. One is up Rush Creek to Lower Gem Lake, Gem Lake, and Upper Gem Lake. Here is where they catch the big fish. Another trip is up Reverse Creek to Gull Lake and Summit Lake.



THE AUTHOR PROUDLY DISPLAYS HIS SPOILS—A FIGHTING NORTHERN PIKE CAUGHT IN LAC LA CROIX



THE GUNNISON RIVER, IN COLORADO, AND ITS TRIBUTARIES ARE FAMOUS AS FISHING STREAMS, AND MANY PRIZE-WINNERS HAVE COME FROM THESE WATERS. THE FIGHTING RAINBOW IS THE KING IN THIS VICINITY AND THE SUPREME CATCH OF THE VISITING ANGLER

Both have big rainbow and Loch Leven trout; but one must fish deep to catch them here. Another wonderful fishing ground lies just over the summit, around Shadow Lake, Garnet Lake, Agnews Lake, and the headwaters of the San Joaquin River. Here you find rainbow and golden trout."

If California calls you and you seek fishing there, try this section around Mono Lake.

The minimum equipment the trout fisherman needs, besides rod, leader, line, and reel, is a gray hackle, a royal coachman, and a small spinner.

An old timer, who has caught fish in mountain streams for years, declares that he tries trout with these two flies and the

spinner, and if they do not rise to one of the three, he quits.

Personally, I have caught more trout on gray hackles and the royal coachman than all other flies combined. But the black gnat, willow fly, some sober brown fly, a red ant, and a Rio Grande King have proven effective at times. There is a bewildering array of flashy flies, that suggest rainbows gone mad, which seem to be made especially for attracting newly enthused fishermen. The fish do not seem to appreciate these much as food. Perhaps they are so lovely to look at, the fish refuse to bite them. The final test of whether a fly will lure a trout lies in how near it appears like some live, real fly that lives in the region. If it has some live likeness—that is,

[Continued on page 447]

Tongass--The Island Forest

BY BOB BECKER

ALMOST in the shadow of the Arctic Circle, the people of the United States own a great forest. It lies in Alaska, that land of infinite variety and resource, and its name is the Tongass National Forest. Great, carefully guarded forests, broken into numberless islands, watched over by the United States Forest Service, stretch for miles up and down the coast, providing hunting, recreation, and rugged playgrounds about which few Americans have much knowledge.

Here, in splendid stands of timber, mostly hemlock and spruce, are fox farms, salmon canneries, traders' cabins, miners' and woodcutters' camps, and a few isolated towns.

tional Forest, which stretches along the coast of southeastern Alaska for some 300 miles. From the boat, as far as the eye can see, timber and mountains, picturesquely capped by snow and ice, rise against the horizon. The forest boundary embraces a strip of mainland thirty miles wide fringed by hundreds of islands, which range in size from mere wooded points to others a hundred miles long and twenty-five miles wide. The forest derives its name from Tongass Island, which was named after the Tongass tribe of Indians. All of the islands, as well as the mainland, are mountainous, and the whole region gives the impression of a mountain system partly submerged. The



THE LAND OF INFINITE VARIETY

A view, at sunset, in the Tongass Forest, where water, mountains, timber, and snow combine to make a rugged land of adventure. For marvelous scenery there are few regions in the world to compare with it.

It will surprise many Alaskans themselves to know that the Tongass Forest ranked first among the National Forests of the United States in the volume of timber cut during the period 1917-1921. The Tongass has not waited for the development of its pulp and paper industry. It is sustaining a fish industry with its sawed timber and piling. It is only a question of time until this forest, with its great timber resources, draws to Alaska modern pulp and paper plants and sawmills.

But, in spite of the large amount of timber which this forest is supplying, it has as yet yielded little to the inroads of civilization, and the outdoor lover, and more particularly the sportsman, finds here a splendid hunting country.

Although few tourists are aware of it, the visitor going to Alaska enters the territory through the Tongass Na-

coastline is so irregular that some of the bays or fiords extend inland for a hundred miles.

A FOREST LAND UNMARRED BY FIRE

As one can readily imagine, these characteristics, in combination with magnificent forests, produce a type of water and mountain scenery equaled in but few parts of the world. Standing on the deck of your boat—and the only way really to appreciate this scenery is to travel in a small gasboat—you look up at steep mountain slopes, timbered from the water's edge to an elevation of 2,500 feet with forests of spruce and hemlock. This dark, somber green cover is unbroken and unmarred by black, burned-over areas, for the humid climate of southeastern Alaska has saved the beautiful Tongass Forest from forest fires.



FORESTS UNMARRED BY FIRE

Although timber from the Tongass Forest supports a great salmon industry, fire and civilization have scarcely touched it. Forests of spruce and hemlock cover the islands and stretch for miles up and down the mainland.

There is no doubt that this part of Alaska is humid. It has been known to rain 8.4 inches in 24 hours along the coast. In fact, the story is told that often it is possible to see ducks flying along in the rain until the downpour becomes so heavy that the waterfowl can fold their wings and paddle in mid-air! Allowing for the fact that this may be a slight exaggeration, nevertheless southeastern Alaska is certainly wet.

Snow and ice are features of the landscape above timber-line and many of the peaks are perpetually capped with blue-green ice fields. Snow-covered peaks as beautiful and impressive as any found in our Western States, which draw tourists from all over the country, are so common in this mammoth woodlot of Uncle

Sam's that many of them have never been named. As one tourist phrased it, "You could drop all the show spots of Glacier National Park in this Forest, and alongside the Tongass timber, glaciers, valleys, and peaks they wouldn't even make a splash."

On the strip of mainland numerous glaciers extend from the high ice fields down the winding valleys to the sea, and green timber encroaches to the very edge of the ice fields. Some of these glaciers beggar description. Tourists—hundreds of them—travel to Europe each year to exclaim over glaciers and ice fields that would make just one arm of one of those glaciers along the Alaskan coast. The view obtained from passing steamers of these immense "frozen rivers" is inspiring. Sometimes silhouetted against the water and dark-green timber are huge, deep-blue icebergs, which are driven for miles along the sea channels by wind and tides.

Although the fascinating Tongass Forest is only partially known to its owners, the American public, and hence but partially appreciated, its rivers and its wealth were used and valued highly by the Russians when they owned the territory. Large and swift-flowing streams have cut through the mountains along the coast of Alaska back into British Columbia, and during the Russian occupation of Alaska these rivers were highways of trade. Trading posts were maintained, and in the old days the Indians from a large section of northwestern America journeyed down these waterways, through the forests of spruce and hemlock, their canoes laden with furs, to exchange their catch for food and traps and ammunition. Today these same rivers are avenues of travel, piercing their way through the dense, almost tropical, growth and carrying a few hardy frontiersmen and sportsmen.



A RANCHER AND HIS BLUE FOXES

Almost every island in the Tongass Forest is occupied by an adventurous Robinson Crusoe, engaged in fox ranching. This picture, taken on Brothers Island, shows a group of blue foxes having "lunch" from the rancher's hand.

ISLANDS OF ADVENTUROUS ROBINSON CRUSOES

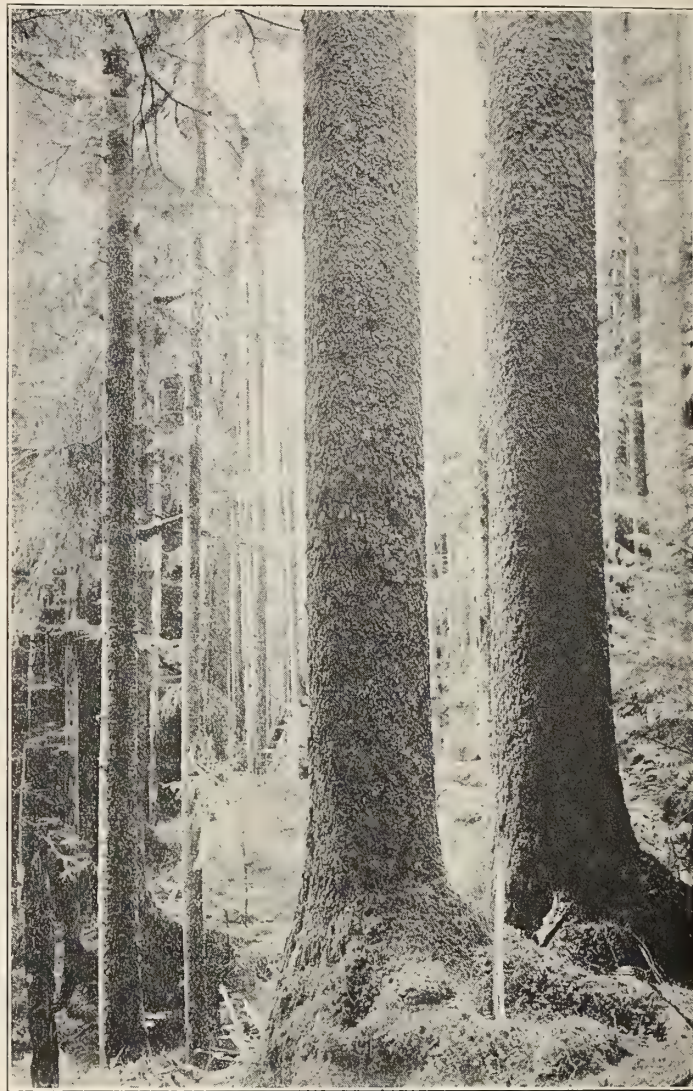
Although the Tongass Forest has been on the map for many years and the regulations of the Forest Service permit commercial development and utilization of the timber, a few towns, fox ranchers, and sportsmen, with a sprinkling of fishermen and lumberjacks, occupy this huge stretch of timber. Instead of large cities and the evidences of modern civilization, there are miles and miles and islands and islands of virgin timber, inviting the outdoor lover. And there is adventure in every mile and on every island.

Practically every desirable island within the Forest is now the home of a fox rancher. This is one of the great activities in southern Alaska. Every week sees another



A BACKYARD SOMEWHAT TILTED

From the boat you look up at steep mountain slopes, somber green with timber. In this instance the slope is almost perpendicular.



RIGHT AND LEFT BOWERS

These two Sitka spruces are fair samples of some of the higher quality timber on the Tongass Forest.

rancher launched in the precarious but sometimes remunerative business of raising blue foxes. The Forest Service leases the small islands to the ranchers, and there they can turn loose as many pairs of blue foxes as they wish, build themselves little wilderness homes, watch over their valuable pets, and wait for "harvest time." Robinson Crusoe ranchers, they are, kings in their little domains, guarding their precious blue foxes.

Probably few business enterprises in the Northland combine so much romance, hard work, and adventure as this business of fox ranching, which is today apparently a permanent feature of the Tongass National Forest. From a few scattered ranches in southeastern Alaska the business has grown until today there are more than 80 establishments devoted to the raising of the handsome "blues" for breeding purposes or for their valuable pelts. It was not until 1907 that the fox ranching business began to grow by leaps and bounds, as in that year the National Forests were set aside in the territory and the Forest Service began to lease entire islands for ranching purposes. Since that day the increase has been remarkable, and now there are hardly enough desirable islands to

supply the demand. The fur of the blue fox has a distinct place on the market and brings a good price to the rancher. This past summer a prime pelt would bring around \$125. A healthy pair of animals for breeding purposes brought anywhere from \$300 to \$400.

Some of these little islands occupied by the ranchers are veritable paradises. All are forested, and giant spruces and hemlocks—two, three, and four feet in diameter, their branches draped in moss, often surround the little cabins of the ranchers. Underfoot is a carpet of moss in which the foxes have made their trails. On a number of the islands deer provide the isolated fox farmers with fresh meat. There are other compensations for

action. During the summer the bears frequent the mouths of the salmon streams, as they love their fish. As soon as the first run of salmon appears at the mouth of a stream, the bears arrive, and there they stay during the summer months. Trails eight and ten inches deep, worn by these big animals, can be seen along the banks of a stream, as they walk back and forth to their fishing grounds. When the struggling salmon, trying to reach their spawning grounds at the head of a stream, fight their way against the current, through the shallow places and over the rocks, the bears step into the shallows and with their paws toss out dozens of the fish, which make a fine meal for Mr. Bruin.



UPSTREAM TO THE SPAWNING GROUNDS

In the Tongass Forest one does not want for streams whose waters, clear as crystal, abound with salmon. In the spring the brown bears come down from their mountain homes and break their long winter fasts with bountiful fish dinners.

the lonely rancher if he has any taste for the outdoors. He can launch his boat and troll for king salmon—rightly named the king of this finny tribe. These can be caught in large numbers, providing both food and sport, as many will weigh twenty and thirty pounds. If the rancher wishes a bit more thrilling sport, he can jump into his gasboat, travel a few miles, and be in excellent brown bear country.

WHERE THE BROWN BEARS GO FISHING

The Tongass Forest includes some splendid hunting regions. On both Admiralty and Chichagoff Islands these big bears, the largest bears on the continent, are quite numerous and provide excellent sport. Utilizing holes in the rocks for dens, usually fairly high on the mountain side, they come down in the spring to tide-water, where one can see the family, including the newly born cub, in

Besides brown bears, the Tongass Forest has other hunting lures for the sportsman. On the mainland in the Forest are found in some places an abundance of black bears. Then there are ducks and geese by the thousands during the autumn. The Forest also holds treasures for the trapper. In that great timbered area the pelt-hunter builds his cabin, blazes his trails, and during the winter season reaps a rich harvest of mink, beaver, and other fur-bearers.

With its thousands of acres of excellent timber, its wild animals, both large and small, its primitive fox ranches, and its hardy pioneers, the Tongass Forest represents a section of America's last frontier. Happily for the forest-lover, who has seen our forests disappear in different sections of the states, this frontier lies far to the north and has thus far escaped despoiling by the march of progress. The wonderful Tongass Forest must not be

permitted to go the way of the pine forests of the East, the Lake States, and the South. The Forest Service in Alaska, while liberal and inviting in its regulations governing the development of the timber resources of the territory, nevertheless will, with the support of the people, see that Alaska is not robbed of her timber. It will be cut under proper regulation, so as to insure forests for all time.

The Service is protecting this wonderland for the whole people, to whom it belongs, and perhaps some day the Tongass country will be a great American playground. Certainly few regions can offer equal attractions. Its superb scenery, giant glaciers, majestic forests, and abundance of wild life typify the America of the Redman—an America which has all but passed into the realm of memory.

Unusual Cocoanut Trees

By C. D. MELL

THE accompanying illustration shows three distinct cocoanut trees which have developed from a single cocoanut. The pistil in the flower of a cocoanut tree is three-celled, as indicated by its triangular shape and

fertilized and developed into normal seeds capable of germinating and producing three distinct plants. This occurs so rarely that when it is observed it is generally regarded as a matter of considerable interest. One of



THREE COCOANUT TREES FROM A SINGLE COCOANUT

the longitudinal ridges, and also by the three eyes or germinating holes of the matured fruit, which are visible when the fibrous outer portion is removed. Each cell has a single ovule, but almost invariably only one of them develops into a seed. It happens, however, that under extraordinary favorable conditions the three ovules are

these unusual triplets was found in British Guiana several years ago. The young plants were donated to the Botanic Garden in Georgetown, where they are now occupying a prominent place in the Public Park and are considered a curiosity to cocoanut growers, botanists, and scientific men in general.

America's Oldest Apple Orchard

BY EDWARD P. ANCONA

AMERICA'S oldest apple orchard! This it must surely be, even though how it came there, from whence the seed, and who was the sower of the seed are questions that no one will ever answer. The written record, if there ever was one, has been undiscovered.

This remarkable group of time-worn fruit-trees is located in a little-visited, remote Mexican hamlet, nestling on the cedar-clad foothills to the east of the noble Manzano Range, in central New Mexico. This region of a romantic past lies about 30 miles, in an air line, east of the Rio Grande and behind the 11,000-foot high, formidable ramparts that separate the fertile main valley of the state from the dry, almost desert, central Estancia Valley. Today a region of primitive Mexican settlements clings close to the foot of the mountains, whose history dates back to the first decade of the past century. These hills once saw a chain of Indian pueblos, seven in number in historic times, that stood on or near the sites of the present towns. The

pueblos, inhabited by two branches of the Pueblo peoples, the Tiguas and Piro, were abandoned through fear of Apache raids, one even under the stress of direct assault, not long after the first Europeans, the Spanish Conquistadors, came into this region. They stayed only long enough for the building of some mission churches, for the christianizing of the people, and for the recording of the

fact in Spanish records that they did exist.

It was in 1629 that Francisco de Acevedo, a brave Spanish monk, ventured into this region, known as the Land of the Saline Pueblos, leaving behind him the comparative security of the settlements on the Rio Grande.

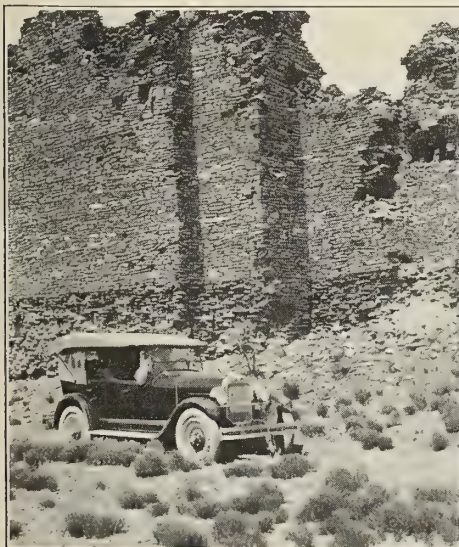
His work of christianizing the Saline, started at Abo, led to the eventual conversion to the church of all of the seven pueblos of the Manzano hinterland by himself and other Franciscans.

In 1635 came one Fray Geromino de la Llana, a native of Mexico City, who started his work at Quarai, which is five miles below the present town of Manzano and its

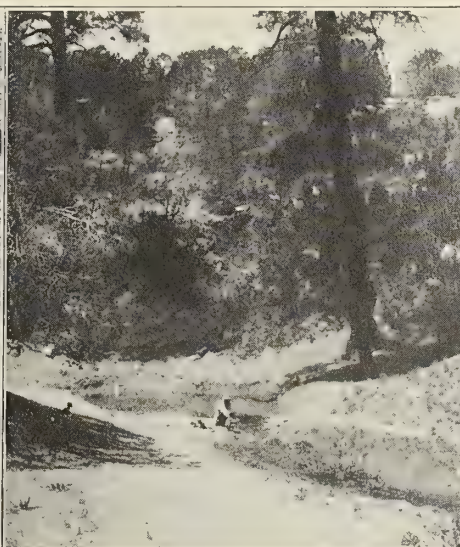


E. P. Ancona

THE ANCIENT ORCHARD ON THE SHORE OF THE RESERVOIR, FILLED FROM OJO DEL GIANTE



A BIT OF THE PICTURESQUE RUIN OF THE QUARAI MISSION CHURCH, BUILT ABOUT 1640



THE ANCIENT SPRING, OJO DEL GIANTE, OR THE GIANT'S SPRING, AT MANZANO, NEW MEXICO



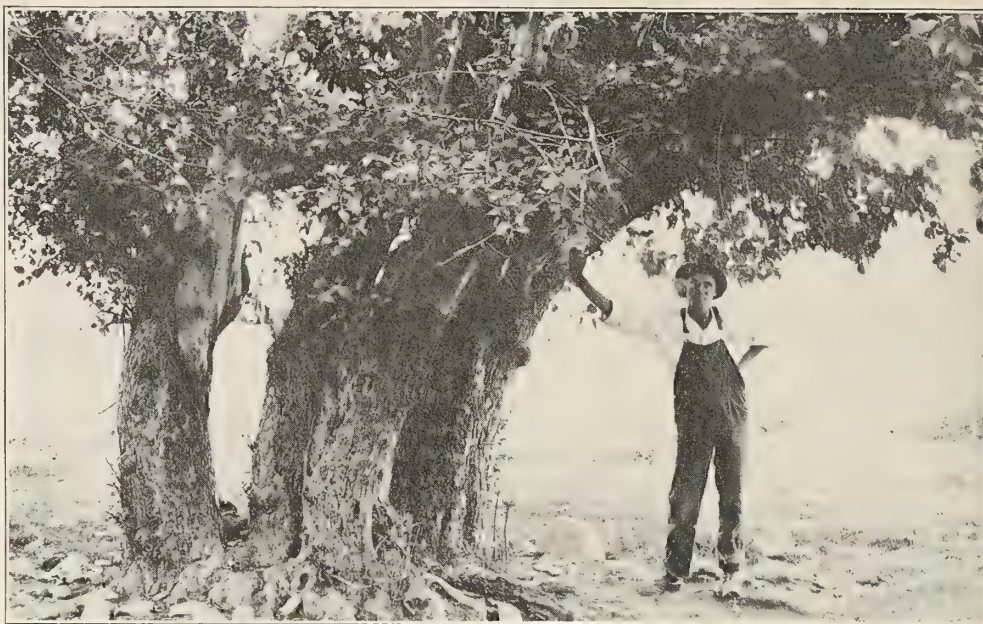
E. P. Ancona

"TORREON," OR OLD SPANISH TOWER OF DEFENSE, AT MANZANO

famous orchard. At Quarai the good Fray built a church of noble proportions, a great structure, out of flat sandstone rocks cemented with adobe, a church in the form of a cross whose arms were 50 feet by 112 feet and whose roof must have been 50 feet above the valley floor, the walls two feet thick. Much of it still stands today, an impressive and dignified monument to a heroic soul who lived in an age of romance. For twenty-five years Llana served the Quarai Pueblo, his good deeds living records attest in the memory of Indians of New Mexico as late as 1706.

One guess is as good as another, and it is more likely than not that from Mexico Fray Llana brought or had brought the apple seeds that started the Manzano orchard. As far as known, no pueblo existed at Manzano, but there was there, and is today, one of the most bountiful springs of pure water found anywhere. It is likely that the Quarais used the lands below the great Ojo del Gigante (the Giant's Spring) as part of their cultivated area, and that the Spanish priest planted the orchard near the spring, in a well-watered spot, as part of the general development of the pueblo. Orchards in those days were usually mission activities and not planted by the average Spanish or Indian rancher.

The increased prosperity of the Salines as a result of the Spanish efforts resulted directly in their own undoing. The crafty Apache, bold freebooter of the Southwest, seeing the rich booty of food and animals, swooped down out of the limitless desert, struck, carried away what was



M. W. Talbot

THIS PICTURE SHOWS THE CLUMP HABIT OF GROWTH, WHICH IS QUITE COMMON AMONG THE TREES OF THE OLD ORCHARD. IT IS IMPOSSIBLE TO ESTIMATE THE EXACT AGE OF THE GROVE

portable or drivable, and was gone. Even though walled as was Quarai, fear finally prevailed, and one by one the Saline pueblos were abandoned, the people moving to the safety of the Rio Grande, where some of the descendants of Abo and Quarai are found today, below El Paso.

But the orchard grew on. In 1675 the last of the pueblos, Tajique, fell under direct assault of the Apache, and silence and oblivion descended on the Saline region for over a century. The Apache ruled supreme. The pueblos crumbled to mud heaps, almost indistinguishable from the surrounding topography, and the fine mission churches, reared with such infinite faith and patience, began to yield to the fierce winds and the summer rains.

In 1846 Lieutenant J. W. Abert, of the U. S. Army, with a scouting party of troopers, visited the Manzano east slope villages, then inhabited for nearly half a century

by Mexicans, who had in several instances built their towns on the sites of the old Indian pueblos. He was the first to write of the Manzano orchard and the Saline pueblo ruins in the English language, and he commented on the fact that the trees were planted very close together. This is an important observation, as even 80 years ago this orchard was a sprout growth, resulting from trees that had been planted there long before. At a fandango held while Abert and his troopers were there, it was noted that one of the natives went about the hall selling apples.

In 1880 Adolf F. Bandelier,



M. W. Talbot

A CLOSE-UP OF ONE OF THE OLD TREES IN AMERICA'S OLDEST APPLE ORCHARD, SHOWING ALSO A FEW NATIVES AND A PRIMITIVE MEXICAN DWELLING

the best-known historian of the early American days of the New Mexico region, visited Manzano, and his investigations led him to affirm that the origin of the old apple orchard predated 1675. He questioned the natives on the subject in the various towns along the foothills, and they held to the story that in the memory of their fathers and grandfathers the orchard had always been there. In other words, it was there when the Mexicans resettled the Saline region, about 1800.

As it stands today, the orchard is in two groups—one of 50 trees at the foot of a low hill bearing on its crest a stone cross, the trees on the edge of a considerable artificial reservoir catching the flow of the great spring that literally bursts from the hillside a quarter mile up the canyon. Another small group of 16 trees is distant a few hundred yards down the canyon and beyond an old Spanish "torreon" or tower-like fort dating back also to the Conquistador days.

The trees are obviously sprout growths, many of them in groups of two or three starting from a common center where once grew a tree now entirely decayed and gone. The present stand of trees is quite decadent, many being more than half dead. They still bear fruit that is used, the apples, however, being quite small, obviously seedlings. Naturally cuttings or grafts or grafted stock could not

have been brought here in the early days; only the seed brought in the pack of some priest—doubtless the mission church builder, Fray Llana.

Two years ago the Forest Service, with the permission of the present padre, felled a tree practically dead and examined a cross-section of the trunk, taken to Albuquerque for that purpose. Under the lens, a forester and a plant pathologist were able to determine that the tree from which the section was taken was 96 years old. This particular tree, however, was not the largest in the orchard.

The present-day guardian of the orchard is the Rev. José Gauthier, an amiable French padre, who has served the Manzano folks for the past quarter of a century. Somehow, in this old Manzano country, one naturally falls, in discussing time, into the habit of using centuries instead of years. Father Gauthier told us, on the occasion of our recent visit, that the orchard today belongs to the local church. This possibly is an inheritance from the old Quarai Mission, now only stark, crumbling walls of rock, if an inheritance can jump over a lapse of a century and a half, when man almost forgot that there existed settlements east of the Manzanos and had to rediscover these interesting ruins and just as interesting apple trees, whose history leaves so much to conjecture and imagination.

ANNOUNCEMENT OF WINNERS IN AMERICAN FORESTRY'S

Prize Story Contest

The following awards have been made in AMERICAN FORESTRY'S short-story contest--open to forest rangers and forest rangers' wives--which closed on June 1:

Contest for Forest Rangers

For the best story on "MY MOST EXCITING EXPERIENCE AS A FOREST RANGER"

First Prize—A No. 956 Hamilton Watch, **E. C. PULASKI**, Wallace, Idaho.

Second Prize—A Winchester Model '94 Carbine, **A. PRICE TOWNSEND**, Philipsburg, Montana.

Third Prize—A Comfort Sleeping Pocket, **W. C. McCORMICK**, McCall, Idaho.

Fourth Prize—Choice of a bait or fly model Bristol Casting Rod, **WALTER J. PERRY**, La Madera, New Mexico.

Contest for Forest Rangers' Wives

For the best story on "THE FOREST RANGER'S WIFE."

First Prize—Fifty Dollars, **MRS. L. R. DE CAMP**, Truckee, California.

Second Prize—Thirty-five Dollars, **CONSTANCE T. MAINWARING**, Clovis, California.

Third Prize—Twenty-five Dollars, **MRS. D. H. LEWIS**, Helena, Montana.

Fourth Prize—Fifteen Dollars, **MRS. IDA L. WOODS**, Libby, Montana.

Publication of the stories awarded first prizes will be made in the August issue of AMERICAN FORESTRY. Other stories will follow in subsequent issues.

History Written in Trees

By G. P. MELROSE

A GRAPHIC record is here shown of the fire history of a certain Western valley where yellow pines raise their massive boles in park-like stands of vivid green and orange. As a result of the open nature of the forest, the ground is covered by a luxuriant growth of grass and weeds of various kinds, that afford excellent grazing to many herds of cattle. In the fall of the year these plants die and form a dry mat of inflammable material that, once ignited, burns swiftly and hot until its fuel is consumed. For many years cattlemen have thought that, by burning off this accumulation of dry grass, a better growth of fresh fodder would be secured in the spring. This theory has been pretty effectively exploded by scientific investigation, but while it existed a vast amount of damage was done to forests and grazing alike.

The forests suffered in several ways from fires set with the above idea in mind, the greatest loss being in seedlings and small trees, which should be the basis of a new forest when the old, mature trees are cut. Given a chance, the old trees will scatter seed, raise seedlings therefrom, and so perpetuate their kind; but seedlings have small chance of survival when a hot fire consumes the dry vegetation among which they grow. Thus it is that a great many of the yellow-pine forests of the West are composed entirely of old, mature trees. The loss in wood that might be growing and the loss in time to

produce a new stand that might now be on its way amounts to many millions of dollars over the entire yellow-pine region, practically all of which has been subject to periodic light fires. The vegetation in the yellow-pine forests has another function distinct from its value for grazing. By rotting down and mixing with the soil, it forms an ingredient most necessary to tree-growth—a fertilizer. Fires rob the soil of this necessary element, and the production of wood on the area covered is reduced in consequence.

The standing trees suffer directly from light fires mainly by the scarring of the butts. At the bases of all trees there is an accumulation of needles, cones, and twigs that have dropped from the crown above. These become as dry as tinder, and when ignited burn fiercely against the bark of the tree. The heat is thus concentrated, the bark is burned through, and the living tissues underneath injured. In an endeavor to protect the wound from decay, the tree then pours sap, or pitch, from the adjacent living wood to cover the exposed surface. Although the pitch keeps the wound antiseptic, it is a great detriment in case of another fire, on account of its inflammability. In addition to covering the wound with pitch, the tree immediately commences to heal it over by growing inward from the sides. It is an exactly similar process to the healing of a wound on a human body. The healing will eventually be



Photograph by J. L. Alexander

THE SILENT SUFFERER

Once again a tree bears witness. This photograph of a cross-section of a fire scar taken from an old yellow pine clearly shows that at least thirteen fires burned over the area on which it stood, their history being thus indelibly engraved on the body of their victim. The first fire scarred the tree 193 years ago.

completed and the wound disappear unless some subsequent enlargement is made. Unfortunately, due to the ideas mentioned in the first of this article, it very often happens that several fires run over the same area at intervals of a few years, catching the pitch on the old scars and opening new ones. Often one or two fires will kill a tree or burn the butt entirely through. It then becomes a complete loss. Even if not entirely destroyed, the scars left spoil much of the highest grade of lumber, found in the butt logs.

How many fires can run over the same area and how many a tree can withstand are difficult questions to answer, but from the photograph of the cross-section of a fire scar taken from a yellow-pine tree, which is reproduced herewith, it can be seen that at least thirteen fires burned over the area on which this tree stood, and their history is indelibly engraved on the body of their victim. Bearing in mind that a tree puts on a layer of wood all over its stem and branches each year, and that on any cross-section these layers appear as rings or lines, we can see that the first fire scarred this tree 193 years ago. It immediately started to heal that original wound only to have it reopened 14 years later. This is shown by the number of layers between the innermost scar and that next to it. Again the healing process went on, but once more a fire opened the old sore, this time after an interval of 9 years. Again and again the same thing happened, the tree constantly making a gallant but losing fight, until eventually it would have succumbed under repeated burns.

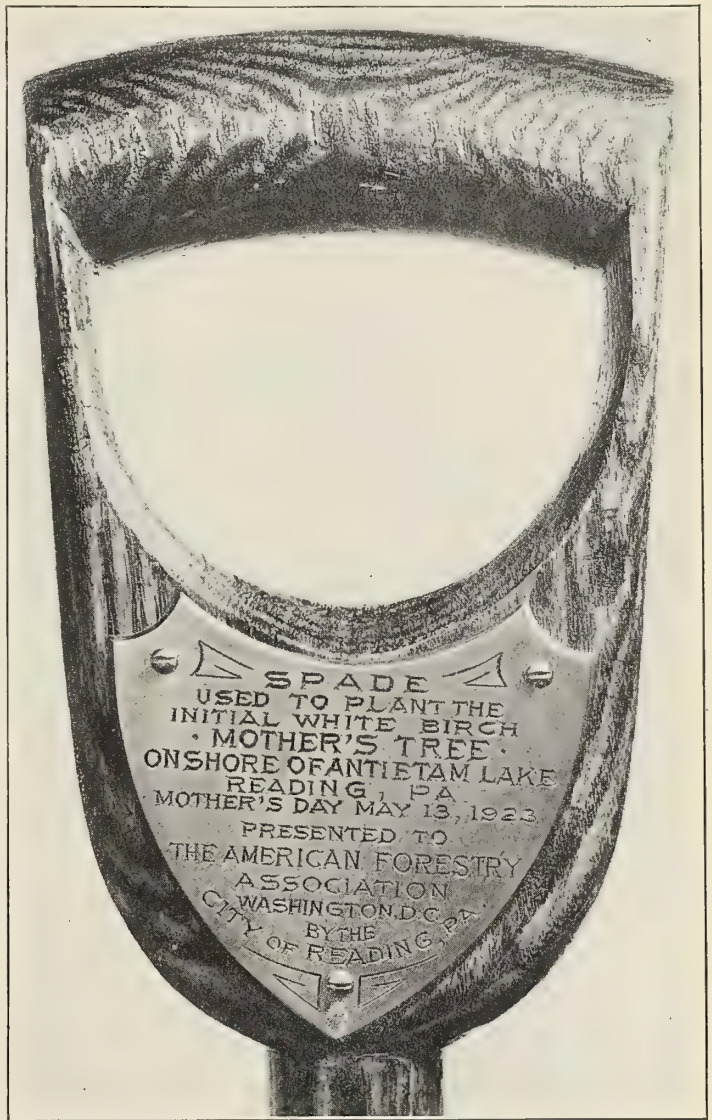
What untold damage has been done to the same stand in loss of fertility in the soil and thus growth on the trees, trees entirely consumed, and high-grade lumber damaged, one cannot tell. The fires must have started long before the first white men came to the country west of the Mississippi, and we can well believe it, for many of the ideas of benefiting the range by burning have come from the erroneous beliefs of the primitive red men. The scars on this tree stand living proof of the persistency of superstition and the great destruction that often results therefrom. Happily the pure light of modern science is chasing away many of those old beliefs, and the day is fast approaching when the useless waste of our natural resources, so long a dominant characteristic of this vast country, will cease forever.

The Merciful Release

THE following was found in a Rainier ranger's files attached to correspondence relative to the disposition of an old mule:

"KIRK: Dispatch old Noah to the Green Elysian Pastures beyond the River Jordan. There are no burdens there to carry.

"Some day I, too, shall come to the end of the long trail and shall camp on the broad plains beside that mighty stream. Then will I look about for the homely frame and honest countenance of this friend of man.—ED."



HANDLE OF THE "MOTHER'S TREE" SPADE

The spade with which the initial Mother's Tree was planted, on Mother's Day, at Reading, Pennsylvania, has been formally presented by the City of Reading to the American Forestry Association. The plate shown was attached to the handle, and the spade was carefully boxed in a handsome case for presentation and shipment. The Association is urging the planting of Mother's Trees, and it is the intention to send this spade, which turned the earth on the first white birch planted to honor motherhood, to serve again whenever it may be called for.

Little Known Facts

Ninety-eight per cent of our rural dwellings are of wood.

Fifty-nine per cent to 98 per cent of our city homes are built of wood—a figure governed by geographic location.

Ninety per cent of the paper used in printing is made of wood.

To manufacture cement coal must be used. Coal mines of the United States use annually almost 300,000,000 cubic feet of wood.

"I believe in the forest, and in the meadow and in the night in which the corn grows."—Thoreau.



*The Incarnation of Perfection in an American Elm. This Magnificent Specimen is in the Grounds of
Dr. Samuel Fessenden Clark, of Williamstown, Massachusetts*

To the Elm Across the Meadow

*Great Elm, thou art a gift to him who holds
Communion with thy noble reach from earth
To sky.*

*All through the winter I have watched
The living arches of thy naked arms
Toss, gaunt and somber, in their sleep.
But once from out the east there came at dusk
A rain, a bitter rain, that held the long
Night through, freezing as it fell. Then spoke
The west, ushering in a dazzling world,
And thee ensheathed in splendor to thy tips,
Tossing thy coronal's thousand glittering plumes,
With myriad scintillating brilliants decked,
Against the pale blue ether of the sky,—
Cold purity's quintessence flashing fire!
And then anon as on the springtide paced,
And after all thy lessers had been served,
I watched the creeping of the pale young down
Insensibly to feathers, then to plumes,—
Till lo! thou art encrowned with living green,
And all thy lovers hail thee Queen by right
Of strength and grace!*

*Not even the night has power
To nullify thy presence. Still we see
In silhouette against the starry dark,
The noble curving of thy gracious arms
In benediction bending ere we sleep.*

—DAISY SANIAL GILL.

Road Construction Material by Mail

By NORMAN C. McLOUD

ROAD building in the National Forests is not always an easy proposition, and sometimes presents curious obstacles. The delivery of construction material in advance of the work itself is apt to be a difficult matter, because of the absence of roads in virgin forest regions. The handicap is overcome in various ways, but in none by method more practical nor more engaging than that devised by a contractor on the road through the Klamath National Forest in California.

With a contract for constructive work on the new road, a contractor found himself confronting a serious problem as to the delivery and distribution of his materials. It was necessary that culverts should be built first, and this involved the placing of corrugated iron culvert pipe at various places along the route. The contractor realized that in this rough and inaccessible country the distribution of the pipe would be an expensive undertaking. As a solution of his problem, he achieved



THE TRUSTY BURROS WITH THE CONTRACTOR'S UNIQUE MAIL STRAPPED SECURELY TO THEIR BACKS FOR SAFE DELIVERY THROUGH UNCLE SAM'S POSTAL MEDIUM

The Klamath River Forest road passes through a region which has been practically impenetrable and in which there had been no development of civilization until the new thoroughfare was undertaken. Lying between the Klamath Mountains and the Pacific coast, this section is in almost the identical state of forest primeval that existed before the days of '49. The region is inhabited principally by Indians who live in the primitive fashion of their ancestors of past generations.

the plan of sending the pipe by parcel post, which had the result of placing on the United States Government the burden and responsibility for its delivery.

The illustration shows a herd of parcel-post burros on the trail with the contractor's "mail," each of the pack animals carrying two sections of pipe strapped to his back, each piece of pipe properly stamped and addressed as legitimate matter for the parcel-post service to handle.

Extract from Wasatch Forest History Notes

In the early days of the Forest Service, Morgan Parke, then a boy, and his father were cutting and skidding logs in yellow pine grove, when Supervisor D. S. Marshall happened to ride up. The Supervisor stopped and, in a firm businesslike manner, inquired:

"Who gave you authority to cut this timber?"

The old man was rather surprised as cutting of timber

in the great free outdoors had never before been interfered with; he hesitated a moment and replied:

"God Almighty."

The Supervisor said: "Well, go to it, then. He's my superior officer," and rode on up the canyon. Later, however, he returned and fixed up the timber sale in regular order.—W. G. MANN.

The Forests for Recreation

BY GEO. BIRD GRINNELL

TO OFFER to the public opportunities for outdoor recreation is an important function now being performed by the Forest Service. Local people, those who reside in the neighborhood of the National Forests, already understand this, but I am not sure just how far it is known to the general public.

Two or three years ago I spent a few weeks in the Big Horn National Forest, and with my own eyes saw something of how this matter of recreation in the Forests is working there.

I had gone into the Big Horn Mountains with a small party of Indians for the purpose of gathering some of the

that the occupants were on their way to camp. Along some of the larger streams we found automobiles standing and we came on many places where people had recently been camped.

All these automobiles seemed to be driven by anglers, and with the fisherman had come their wives and their children, their mothers and their daughters, and each one seemed to be provided with a fishing rod. All were prepared for life out of doors and all seemed to be enjoying themselves. The men were rough, ready, frank, and enthusiastic about the fishing. They worked with the patience of the proverbial angler, cast their flies untiringly,



Photograph by courtesy American Anthropologist

THE MEDICINE WHEEL

An ancient Indian monument of which for many years something has been heard, but which few have seen. When it was built or by whom is mere conjecture. Under one of its stones were found Venetian beads of the fifteenth century.

food and medicinal plants used by the Cheyennes. We traveled about from point to point on horseback and with a wagon, stopping now and then to dig roots or to gather flowers, and in time secured a small but interesting collection of plants, which included many that the Indians formerly used for the partial support of the well and for the healing of the sick.

As we moved about from place to place with our slow, old-time conveyance, swift motor cars often rushed by us on the roads. Many of these, in addition to their passengers, were loaded with camp equipage, tents, blankets, boxes of cooking utensils, a stove pipe, and other like articles which offered unquestionable evidence

or, if not fly fishermen, hunted for grasshoppers over the river bottoms with an energy that showed how eager they were to get back to the stream.

The women were brown, busy, cheerful, and natural. Every one seemed to be having a good time and every one seemed also to realize that on this part of Uncle Sam's domain he was welcome and free and independent. The Forest Service has let it be known that people are expected to come and camp and enjoy themselves on this reservation.

At Woodrock, near the office of the forest ranger, were a number of camps where the people were living in tents; but, besides these, some houses of wood were being erected, which gave the impression that small areas of

land had been turned over to be used as more or less permanent camps.

While in camp there I took the trouble to look at one of the registry books, which the Forest Service has put out with the request that visitors inscribe their names, and to count those signed in one month. In the thirty days from June 24 to July 24 I found that 171 visitors had registered. All the names except 19 were those of people residing in near-by towns or settlements, and these local people had almost all come by automobile and for the fishing. Those from a distance included people from Washington, Colorado, Arizona, Missouri, California, Nebraska, and New York. The total number of people who are now visiting our National Forests is, I am informed, over five million.

Later in the season I went off in a different direction, in the Big Horn Forest, to visit the Medicine Wheel, so called, an ancient Indian monument of which for many years something has been heard, but which few of us have seen, and about which there has been much speculation. The monument consists of a circle of stones on the ground 75 or 80 feet in diameter, with 28 lines of small stones which run from the center of this circle out to its rim. The general aspect of the wheel is closely like a ground plan of the Cheyenne Medicine Lodge. It is regarded by all the Indians of the near-by region as a sacred place.

The Crow Indians who live nearest to the Medicine Wheel have no definite traditions about it, and it is quite impossible to form any very probable conjecture as to when it was built or by whom. It is evident that long, long ago it was a place of resort for great numbers of people, for a broad and well-worn travois trail runs up along the side of the mountain and is visible at a distance of two or three miles, looking like a broad, white wagon road.

There can be no doubt as to the antiquity of the wheel. Mr. H. H. Thompson found, some years ago, two beads and two bits of wampum under one of the stones of the spokes. The beads have been pronounced Venetian beads of the fifteenth century. I know of no living Indians who profess to have seen the Medicine Wheel, although among the Crows and other local tribes there are vague stories about certain mythical people, usually "little people," who live under the ground and pass between their homes and the upper air through a deep pit or cave in the limestone to the west of the Medicine Wheel.

Some years ago I showed an old Cheyenne Indian named Elk River, who was probably born about 1810, a sketch of the Medicine Wheel. He was an Indian of unusual intelligence, of excellent memory and high character, and unusually well informed as to tribal customs and traditions. He said at once that the Medicine Wheel was the plan of an old-time Cheyenne Medicine Lodge, the outer circle of stones representing the wall, the lines leading toward the center the rafters, which he called the lodge-poles, and the center circle the center pole of the Medicine Lodge. Elk River added that the building to the northwest of the entrance and within the circle was the place from which the thunder came, the place in the Cheyenne

Medicine Lodge which is especially sacred, and in which is the buffalo skull. If we imagine the Medicine Wheel to be the ground plan of a Cheyenne medicine lodge, the oval construction to the west and connected with the large circle by stones occupied approximately the place of the "lonely" lodge, where the instruction is given to the medicine lodge makers and from which the Cheyenne medicine lodge women carry the buffalo skull down to the medicine lodge.

On our way to the Medicine Wheel we saw many evidences of visits to the forest reservation by people in search of recreation; but this part of the reservation is not a fishing country, but one where during the hunting season many men come to look for deer. Johnston R. Boyd, who was with us, told many stories of hunting adventure in the region, which is a great resort for blacktail (mule) deer, and, since it is protected, except when hunting may legally be done, it is a refuge where the deer are likely to increase. Here, too, are found many blue grouse, of which but few are shot, because those who come to that part of the country are for the most part big-game hunters.

As time goes on and the country becomes more and more populous, the matter of recreation naturally develops more and more importance, and it is fitting that in our 165 million acres of National Forests camping, fishing, hunting, and other outdoor recreations should be encouraged.

Almost the only danger to be anticipated from invasion of these reservations by the public is that of fire, and it is certain that some fires will occur. It is the duty of the forest rangers, just so far as they can do so, to watch the people who visit the reservations and to see what they are doing. Most of us do not realize how easily a fire may start and we are very careless. Here is an example.

One day I was following along the river a trail used by the fishermen when, as I rounded a bend, I smelled smoke, and presently found myself standing over a log that crossed the trail. It was a pine tree, a foot in diameter, that long before had fallen and dry-rotted, and, having been stepped on and over many times, was covered with a fine dust of comminuted dry wood. On this log, less than half an hour before, someone had dropped a lighted cigarette. The powdered wood had caught fire from the cigarette, was smouldering and spreading very slowly, and on the log there was now a border of creeping fire surrounding a black spot about as large as a dinner plate, which was constantly growing wider. The fire was readily extinguished, but I have often wondered whether, if I had not happened to come along, it would have gone out or would have spread and, after smouldering for two or three days, have become a destructive forest fire.

I suppose that gradually people will learn that in the forest they must exercise a special care about fire, just as in time boys learn to use care in handling firearms.

Col. Henry S. Graves was, I believe, the one who originated the idea of using the National Forests for recreation, and if this is true people of the United States of America certainly owe him a debt of gratitude.

Town Forests in Massachusetts

BY HARRIS A. REYNOLDS

FIFTY thousand young forest trees to be planted in ten Town Forests is this season's program of the Massachusetts Forestry Association. This is the result of an educational campaign conducted by the Association last year to encourage the establishment of forests by towns and cities. The organization offered to plant, free of charge, 5,000 trees on the Town Forest of any city or town which would set aside 100 acres or more for timber production, under the Town Forest Act, during the calendar year 1922. Later, that offer was extended to include the year 1923. Funds were raised for the purpose by special donations from the members of

and other forestry work done by municipalities up to this time has been done on these areas; but the purpose of the Town Forest Act is to encourage the reclamation of idle lands, with the production of timber as the main purpose. There is nothing to prevent a city or town from legally establishing a forest on the areas held as wild parks or municipal watersheds. Some are doing so. The chief advantage obtained from such action comes from the fact that the State Conservation Department may furnish trees free of charge for the planting of Town Forests.

On the other hand, it charges the cost of production for trees to be planted on watersheds or wild parks.



the Association, and the response was so encouraging that the Association hopes to extend its offer from year to year until each of the 354 cities and towns in the state which contain land suitable for timber production have permanently established forests.

While most of the 38 cities in the state and many of the large towns own forest lands for the protection of their domestic water supply, which in the aggregate total many thousands of acres, these lands are not counted as Town Forests in awarding the 5,000 trees unless they have been set apart as such under the Town Forest Act. Nor are wild parks, which are essentially forested areas, and of which there are many in the state, considered in this category. As a matter of fact, most of the planting

THE FIRST TOWN FOREST IN THE UNITED STATES

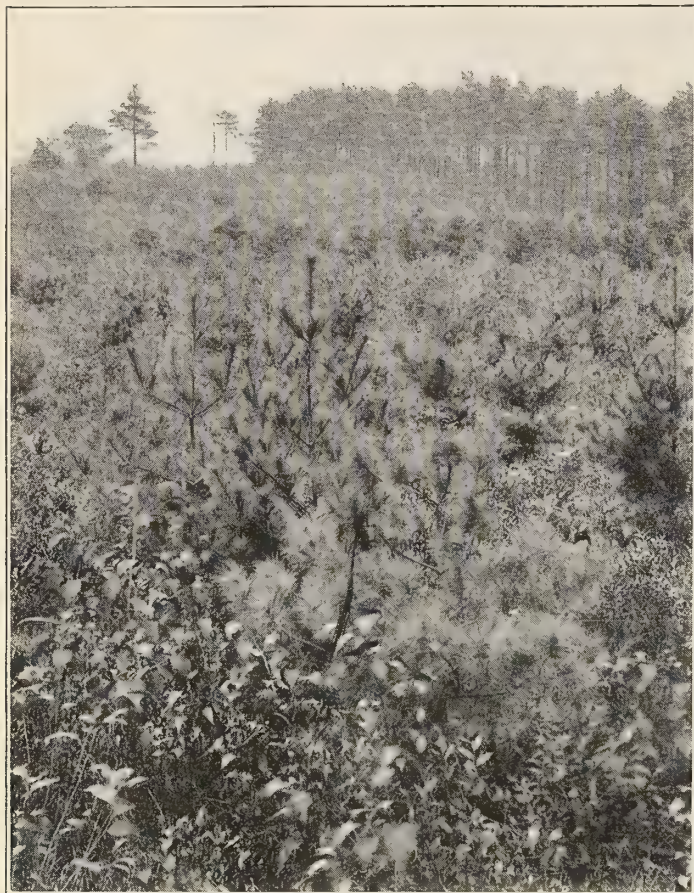
In 1914 Fitchburg, Massachusetts, established a Town Forest, and the school children began planting trees. Every year children are taken to the forest, and spend a few hours working with the spirit of play; and a forest follows as a monument to their play-labors.

In order to bring the subject officially before the public, the Association last year requested the selectmen of all the towns to include an article in the warrant for the town meeting to provide for the ap-

pointment of an official committee to study the possibilities of creating Town Forests and report at the next town meeting.

TWENTY-TWO TOWNS ESTABLISH FORESTS

Over fifty towns appointed such committees and twenty-two now have town forests. The cities and towns that have so far established or voted to establish forests are as follows: Fitchburg, Brookline, Walpole, Petersham, Hingham, Groton, Millis, Falmouth, North



CHILDREN OF WALPOLE

These baby pines were planted by the children of Walpole, Massachusetts, on land donated by a public-spirited citizen for a Town Forest. The tract is now largely reforested.

Attleboro, Bernardston, Goshen, Westminster, Conway, Russell, Great Barrington, North Brookfield, Norton, Groveland, Carlisle, Duxbury, North Reading, and South Hadley.

The areas set apart for this purpose in each town range all the way from 10 acres to 500 acres, with an average per town of well over 100 acres. The land devoted to forest production is not always in a single tract, but often consists of a number of small parcels. The ultimate aim is to set to work any area, however small, which is best fitted for forest growth and which is now lying idle. This approaches the ideal of forest conservation and is a practical example in land utilization.

Acting upon a suggestion made by the Committee on Forestry of the New England Agricultural Conference, held in Boston in January, Governor Channing H. Cox sent a request, similar to the one made by the

Association the previous year, to the boards of selectmen of all the towns in the state, that an article be placed in the warrant of the annual town meeting providing for the appointment of a committee to study the Town Forest problem. The results were most gratifying. Besides the twenty-two towns that have already voted to create forests, eighty-one others have officially appointed such committees. This means that practically one-third of all the towns and cities of the commonwealth have recognized the possibilities of the Town Forests, and it is conservative to state that a majority of these places will have established forests within another year.

The work of such a committee consists of making a rough reconnaissance of the cut-over or burned-over areas, the abandoned farms, the run-out pastures, and similar idle or neglected parcels already belonging to the town. These usually include some of the following classes: watersheds, a farm on which the poor of the town are housed, park areas, lands obtained through the non-payment of taxes or by gifts, or otherwise acquired by the town. The committee's report then usually recommends the establishment of a town forest on such of these lands as are fitted for growing timber.

MAKING A POOR FARM YIELD DIVIDENDS

In many cases these areas are already covered with a good stand of timber, and the town can at once begin to improve the forest and secure an income from it. Petersham, for instance, had a "Poor Farm" which was no longer needed for the poor of the town. It contained about 200 acres, most of which was covered with second-growth timber of various ages. This timber had grown naturally on old abandoned fields that had been farmed up to the time of the Civil War. This farm was made a Town Forest, and the town sold the timber on 13 acres



THE ABANDONED FARMSTEAD

Old farms, long since deserted as worn-out soils, are being acquired by progressive Massachusetts towns and converted into Town Forests. Twenty-two towns now have their own forests.



for \$5,200, or \$400 an acre. Richard T. Fisher, Director of the Harvard Forest, who was a member of the committee, said: "While this sum is at least a third of what the whole property might bring today, it is hardly a tenth of the total returns which may be obtained from the forest during the next forty years." This income will not only enable the town to improve the remaining forest and do planting, if necessary, but it will help to reduce the taxes very materially.

There are some towns in Massachusetts, with small populations and large woodland areas, which by establishing large Town Forests today could within sixty to seventy years have a forest property the annual net income from which would cover all the running expenses of the towns and eliminate the tax bill. That is not an unusual occurrence in Europe, and the towns referred to in this state which have fewer people than they had seventy years ago could do likewise. The land is cheap, the state will furnish trees free of charge, besides giving technical advice, and the price of stumpage is certain to advance far beyond present costs. Besides, the white pine, our principal forest tree, is one of the most rapid growers and is very valuable.

When the town does not own any land suitable for timber production, as is sometimes the case, the com-

mittee searches out the owners of suitable land within the town and endeavors to get options on what it wants for the purpose. This land is usually valued at less than \$10 an acre, and with proper persuasion the owners are often willing to make donations of land to the town when

they know that a public forest will be produced on it. This has happened in several instances. The most conspicuous example is the case of a gift of 150 acres made by a public-spirited citizen to the town of Walpole. This land is quite near to the center of the town and is destined to be a valuable recreation area. The land is already largely reforested, the school children taking an active part in planting the young trees.

The town of Hingham received a gift of 48 acres last year, which has been made a Town Forest, and steps are being taken to reforest it. A very valuable piece of woodland, consisting of about 60 acres, was presented to the town of Groton. This tract adjoined the "Poor Farm" of the town, and, by combining a part of the farm with the area donated, the town has approximately 180 acres of Town Forest located along a beautiful river. About 30 acres of this area, now a run-out pasture, will be planted to white pine this year. Several of the towns have appropriated funds for reforestation and purchase of lands. These sums range in amount from \$100 to \$600.

STARTING THE SAW-LOGS OF TOMORROW

Upper—Character of land on which Fitchburg started its Town Forest.
Lower—Laborers employed to plant young trees on a run-out pasture which was acquired for the building of a Town Forest.

MORE THAN DOLLARS AND CENTS IN TOWN FORESTS

There are very few townships in the state that do not have some lands which can be profitably converted into Town Forests, and under the present system it is hoped and believed that all such lands will be put to work as Town Forests, producing timber. While the amount of planting and other improvement done by any town annually may seem insignificant, yet taken in the aggregate it is certain

to be the most important forestry development in the state. A few hundred dollars spent in reforestation yearly by each town in the state, coupled with the planting done on State Forests and by individuals and corporations, will soon result in restoring growing forest on Massa-

chusetts' 1,000,000 acres of idle land, which can be properly utilized only in timber production.

The Town Forest has more than a dollars and cents value! As a demonstration in forestry practices, it is unsurpassed for the reason that every voter in the town knows something about it and is watching the developments carefully. The records are public and any one can check up to his satisfaction the financial profits or losses. If the Town Forest is successful, it will most certainly lead private citizens to practice forestry on their own lands. Besides increasing the timber production in the town, every Town Forest can and will become a wild park, used for recreation. The recreational feature is merely a by-product, which should not interfere seriously with the silvicultural developments, but at the same time it will relieve the pressure for more parks, which have to be supported by taxation with little or no money return.

As bird and game preserves, these forests should play an important part in the propagation and protection of wild life. In most cases, especially where such land is located near the villages, the Town Forest will necessarily be made a game and bird preserve. Since forestry work, such as thinning, weeding, road-building, and the like, can usually be accelerated or retarded without great inconvenience, the Town Forest will furnish an outlet for



THE LIFE OF THE SOIL

This second growth on Petersham's Town Forest has a wood value of \$400 an acre. And then think of what it is worth for recreation!

the unemployed in periods of industrial distress, where their labor can be profitably utilized and not charged to charity. There are very few ways open to a township for investment that will give a better return either directly or indirectly.

A TRAINING GROUND FOR CHILDREN

One idea in connection with the creation of Town Forests in Massachusetts which the Massachusetts Forestry Association has been advocating for some years is the planting of forest trees by the school children. Fitchburg, which holds the distinction, so far as we know, of having established the first Town Forest in America under a state law providing for Town Forests, has set a splendid example in this work. The forest was created in 1914, and very shortly thereafter the school children each year were taken to the forest and spent a few hours in the planting of baby trees. Some of these plantations are now seven years old, and they make a fine showing.

Invariably these plantings, which are made under proper supervision, have been successful, and they are a constant source of pride to the children, who look upon them as their own.

Apart from the benefit to the children in recreation and in the knowledge of trees, there is an economic value to the city in having each year



THE FIRE TRAIL

Many thousands of acres of burned and barren soil are available for Town Forests. They will produce trees like Petersham's.

several hundred young trees planted. Incidentally, the children are taught to be careful of fire in the woods, which in the long run may mean the saving of thousands of dollars. If the custom of having each of the school children in the upper grades plant a few trees yearly can be established generally, it will not only be of tremendous educational value to the children—the taxpayers of tomorrow—but it will result in the reforestation of hundreds of acres annually with very little cost to the local communities.

I have been surprised to see how quickly the school

[Continued on page 445]

Wood Plays an Important Part in the Construction of World's Largest Stadium

BY WOODBRIDGE METCALF

HERE is at present nearing completion in Exposition Park, Los Angeles, California, what is to be the largest and finest stadium in the United States, if not in the world. It will be known as the Coliseum, and is being built by the Community Development Association under co-operative arrangements with the City and County of Los Angeles. The agreement has been two years in consummation, in which time it has been approved by both the appellate and State Supreme courts. In return for an annual rental, the City and County of Los Angeles will have equal rights of occupancy with the Community Development Association. At the end of a period of years, however, the Coliseum will become the property of the city and county without restriction. The approximate cost of the structure will be \$800,000, the financing being handled by the banks of Los Angeles under arrangements with the Community Development Association. The latter is incorporated on a non-profit, non-capital stock, coöperative basis, all expenses of the association being defrayed by private subscriptions. All revenues derived from the use of the Coliseum will be devoted to a revolving fund for the maintenance of the structure.

The Coliseum, as shown in the accompanying photograph, is elliptical in shape, with one end of the ellipse open above the ground level and adorned by a massive concrete peristyle over 400 feet wide. A colonnade effect is given by the numerous arches, the center one of which is over seventy-five feet in height, in keeping with the gigantic proportions of the bowl itself.

The playing field will be 680 feet long by 344 feet wide, girdled by a running track, 1,668 feet in length, or nearly one-third of a mile. The field is 30 feet below ground level and the highest seat is about 50 feet above ground level. The earth removed from the center of the structure was moved to the sides and rolled into symmetrical shape while moist. About 400,000 cubic yards of earth were

thus moved, and from it the embankment for support of the upper seats is constructed. From the ground level down, the construction is entirely of concrete, except for the wooden seats. Above ground level the newly placed embankment is completely covered by a floor of treated wood covered with heavy roofing paper. This completely hides the earth fill, provides support for the myriad seats, and completely protects the fill from erosion during heavy rains. This novel method of construction gives a very uniform and substantial appearance to the whole, and it is difficult to discern where the concrete stops and the wood begins. Some 300,000 cubic yards of concrete were used in making the lower portion and the peristyle, while over a million board feet of lumber have entered into the work.

A good deal of this was used for concrete forms, but there are nearly 250,000 board feet in the twenty-six miles of seats, besides the flooring, which covers the embankment and timbers used in the superstructure, which rests on top of the embankment, above the level of the



A GLIMPSE OF THE GREAT STADIUM AT LOS ANGELES

upper entrances shown in the picture. Practically all of this large amount of lumber is Douglas fir. It is painted gray to match the concrete of the lower portion and the peristyle.

The minimum seating capacity is 75,000, and with a little crowding several additional thousands can be accommodated without difficulty.

The field is sufficiently large and well equipped to meet all requirements for the International Olympiad. This great athletic meeting has just been awarded to Los Angeles for 1928, and the building of this beautiful Coliseum was undoubtedly a large factor in the making of this award. Plans have been announced by the Motion Picture Producers Association for an exposition in the Coliseum in connection with commemoration of the one hundredth anniversary of the Monroe Doctrine, to take place in July, which will run for several weeks.

Flowers of the Forest

BY R. W. SHUFELDT

ONE of the many kindly services performed by forests is that of providing homes for great numbers of our wild flowers. The species of forest-loving flowers that flourish under the shelter of the green wood are as varied as the forests themselves. Some are quite localized in their habitats; others possess more or less extended ranges. Some appear quite early in the spring and continue to bloom a good part of the year; others flower only during the summer and their blossoms disappear before autumn. In many respects, the forest is a master florist, always ready with a great assortment of flowers for every season. The great variance in forest flora depends, of course, upon species, location, and latitude, character of the forest, and nature of the forest soil. Many flowering summer plants of the forests have very conspicuous blossoms; others less so,

while still others are so modest that unobserving ramblers usually pass them by without noticing them.

A few of the summer woodland flowers of the North Atlantic States are described here. Some of them likely occur in various other parts of the country. Those who have studied the flora of this section will have noted that many of our flowering plants and shrubs occur only under the trees of the forest and do not do well in other situations. So fixed has this trait become in certain species that the plants will not thrive, or even live, in any other localities or when the forest has been destroyed. Thus they are really, by nature, what we may designate as true flowers of the forests.

There is no greater favorite of the forest flora than the almost universally known Spotted Wintergreen, or Pipsissewa. Its scientific name is *Chimaphila maculata*,



FOUR LOVELY REPRESENTATIVES OF OUR WOODS FLOWERS

In the upper half of the picture are two familiar favorites, the Crowfoot and Blue Violets, and below are Indian Pipe and Laurel, the former weirdly beautiful, rising in waxy whiteness "like a company of wraiths in the dim forest" and Laurel, making our woods blush with clumps of lovely color in May.

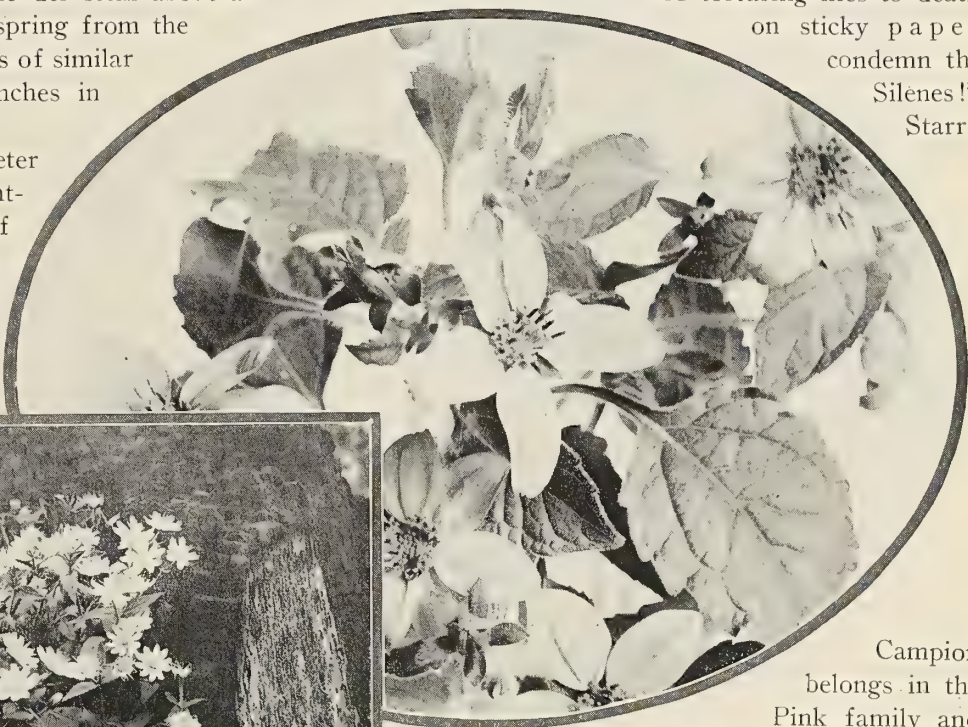
and its generic name has been particularly well chosen, meaning, as it does, a lover of winter.

Pipsissewa is not only a flower of this country, but the plant is found in northern Mexico, Europe, and certain parts of Asia. In the shady forests it usually grows in dry places, its flowers appearing in June and throughout the summer, to the last week in August. The photograph, which was obtained in the woods near Washington, D. C., shows Pipsissewa at its best. Each flower is borne upon a short, smooth, and slender stem about an inch in length, and these, uniting, spring from the upper end of the main stem, which is of similar caliber and averages about two inches in length.

Pipsissewa flowers have a diameter of about half an inch, each presenting five roundish petals, which are of a creamy white and may be faintly tinged with pink. The evergreen leaves are long, slender, and lance-shaped, dullish, and mottled with

hesive grip. "Catchfly" is a common name for the plant; but it is ants and not flies that are its chief victims. Neltje Blanchan notices the menace referred to and speaks of it in her work. "An ant," she says, "catching its feet on the miniature lime-twig, at first raises one foot after another and draws it through its mouth, hoping to rid it of the sticky stuff, but only with the result of gluing up its head and other parts of its body. In ten minutes all the pathetic struggles are ended. Let no one guilty

of torturing flies to death
on sticky paper
condemn the
Silenes!"
Starry



Campion
belongs in the
Pink family and
is known to the botanist



GIANT CHICKWEED AND GOLDEN-KNEE

The small, light-green leaves of the giant chickweed are lance-shaped and furnish a perfect background for the profusion of tiny, white, star-like flowers. More or less localized in the highland region of the Falls of the Potomac, the brilliant yellow blossoms and velvety green leaves of the Golden-Knee distinguish it as one of our handsomest forest flowers.

white. When not covered with snow, they are in evidence all winter and form one of the attractions of the forest at that season.

Starry Campion may be found in the same woods with Pipsissewa. It is one of our most interesting plants. Its blossoms are very feathery in appearance, the edges of the petals being fringed and the stamens of a fleecy structure. As the summer wanes, however, coarser plants appear, the flowers of which are not so dainty. Some parts of the Campion are viscid and sticky, and this glue-like substance is death to ants. No end of these little insects are entrapped by it in the course of a season, as they are unable to free themselves from its ad-

as *Silene stellata*.

Our lovely Laurels and Rhododendrons of the Heath family, with their beautiful flowers appearing from June to July, are also representatives of forest plants, and with them is arrayed, in the same group, the well-known Trailing Arbutus, or May Flower. The American or Mountain Laurel, known to science as *Kalmia latifolia*, occurs in rocky woods throughout eastern United States, and is known by a number of vernacular names. Many refer to it as the Calico Bush, while others know it as the Spoon-wood. When its

flowers first appear they are of a striking rose pink, later on turning white, the pink tint persisting only in their central and deeper parts. The oval, spindle-shaped leaves of the plant retain their deep-green color and glossy surface throughout the year.

Laurel derives its name, *Kalmia*, from a pupil of Linnaeus by the name of Peter Kalm, who, when he visited the forests of this country, was so charmed with the Mountain Laurel in flower that he introduced the shrub into Europe, where it is known as *Kalmia*.

The Indian Pipe, or Corpse-plant (*Monotropa uniflora*), deserves to rank among the plant curiosities of the forests, being comparable with Broomrape and its



WHITE VIOLET

Small flowers, with a delicate fragrance, upheld on slender stems of green.

neath the trees and in damp soil and is a most interesting plant to study, blooming, as it does, in April and continuing to do so until early summer. Its violet or, less commonly, white flowers possess a sweet odor, each being borne at the upper end of the single and erect peduncle, as shown in the photograph. Broomrape attaches itself to the roots of other plants and derives from them the juices upon which it thrives.



COLUMBINE

Hardy, though so delicately constructed, the columbine flourishes on rocky hillsides as well as the borders of wooded glens.

allies. In hunting for Indian Pipe, one should go to the woods where the shade is dense and the soil black, rich, and somewhat moist, and in such places, throughout all the temperate parts of the United States, one is very likely to meet with it anywhere from the middle of June to the end of August. A lover of plants and flowers says of it: "Colorless in every part, waxy, cold, and clammy, Indian pipes rise like a company of wraiths in the dim forest that suits them well. Ghoulish parasites, uncanny saprophytes, for their matted roots prey either on the juices of living plants or on the decaying matter of dead ones, how weirdly beautiful and decorative they are! The strange plant grows also in Japan, and one can readily imagine how fascinated the native artists must be by its chaste charms." We usually find Indian Pipe in little groups in very shady forests, beneath the conifers or the oak trees.

Another curious parasitic plant of the forests is the One-flowered Broomrape, or, as it is also called, Naked or Pale Broomrape. It is usually found in shady places be-

A near relative of the latter is our common Beech Drops, which also belongs in the Broomrape family. It does not flower until August and possesses much about it to remind one of the species just described. We meet with it growing about the chestnut, beech, and oak trees, and it presents many characters well worthy of the nature student's investigations.

False Beech Drops or Pine Sap belongs in the same family with Indian Pipe and is found in dry forests beneath certain trees over

a large part of the United States, extending into Canada. It, too, is a plant of the Old World, being found in Europe and Asia.

Early in the summer, in the forests where the soil is rich and moist, flowering beneath the hemlocks and elsewhere, the little Showy Orchis (*Orchis spectabilis*) of the Orchid group appears. It occurs as far west as Nebraska and southward to the Gulf tier of States. Some know it as the Spiny or Gay Orchis. It rarely exceeds a foot in height; its glossy, green leaves, which are silvery beneath, are two in number and each of a broad, oval outline. The flowers are pinkish, with a thick, white underlip, and they give forth a most delightful fragrance. Still another summer bloomer demanding notice is Dutchman's Breeches, a miserable name to bestow upon such a dainty and deli-



STARRY CAMPION

With distinctive, fringed petals and delicate, feathery blossoms in the early summer.

cate plant, growing among the rocks found in the woods where the soil is rich and adapted to its support. Fortunately, it bears other names, as Eardrops, White Hearts, and Soldier's Cap. Rarely does it grow south of the Carolinas or west of Nebraska and it is not overabundant in any locality. It is one of the earliest of our flowering summer plants, often being in bloom during the first week in May or even in the latter part of April.

Occurring over a good part of the eastern half of the country are two most interesting and lovely plants which both belong in the genus *Cypripedium*; they are most widely known as Moccasin Flowers, while several other vernacular names have been bestowed upon them. For instance, the one with pink flowers is also called the Pink Lady-Slipper, and it occurs in dense, shady woods, growing among the rocks and in sandy places. On the other hand, the Large Yellow Lady-Slipper, or Yellow Moccasin Flower, is sometimes called the Whippoorwill's Shoe in popular works on our forest flowers. Fifty years ago these Moccasin Flowers were extremely abundant over their entire range and it was wonderful to see them growing in rich and extensive masses. However, as the years went by, they proved to be their own destruction, as their bright colors and unusual forms attracted the attention of the wild-flower puller wherever



PINK LADY-SLIPPERS

This interesting and lovely plant is perhaps better known as the Moccasin Flower. Its beauty has marked its doom, for it is now extinct in many places where it was formerly abundant.



PIPSISSEWA

Truly a "lover of winter," and it is a delight to search for and find the dullish evergreen leaves sheltering warmly beneath the snow in the winter woods.

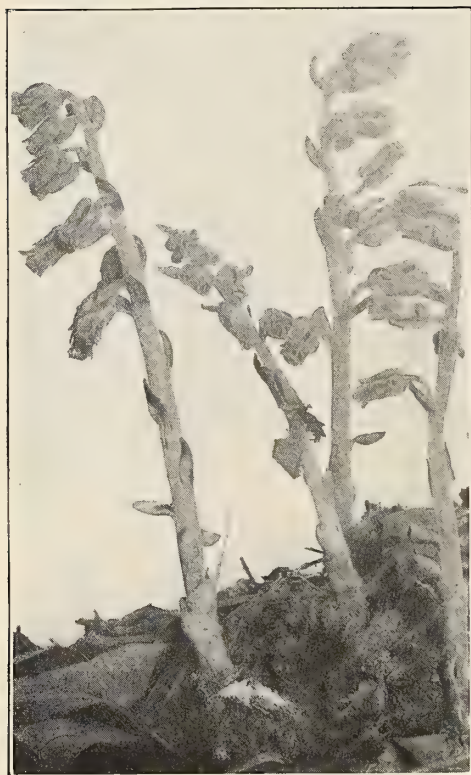
the plant grew. As in the case of so many of our beautiful forest species, they were not only ruthlessly gathered but pulled up, roots and all.

The Lily-of-the-Valley family is represented among the flowers of the forest by at least two very well-known and attractive plants—that is, by the True Solomon's Seal and the Wild Spikenard, or False Solomon's Seal. Either is quite abundant and grows pretty much in the same kind of woods, though the Spikenard prefers a moister soil than the True Solomon's Seal. There ought to be no trouble in distinguishing the one from the other; for, as Neltje Blanchan says, "the feathery plume of greenish-white blossoms that crowns the False Solomon's Seal's somewhat zigzagged stem is very different from the small, greenish, bell-shaped flowers, usually nodding in pairs along the stem, under the leaves, from the axils of the True Solomon's Seal." A number of other plants in our flora are more or less related to the latter, such as the Smooth Solomon's Seal and others.

Among plants, one of the most beautiful things we find in the woods is the fruit or berries of the False Solomon's Seal, which are arranged in a subconical cluster at the distal end of the plant stem. When fully ripe, they are delicately aromatic, perfectly round, and each about the size of an average currant, pale reddish in color, attractively and finely speckled all over with little blackish dots.

When properly pressed and preserved, forest flowers make very beautiful specimens, and the young botanist should collect them at all stages of their growth and development. This is now being done by some of our teachers in the public schools, and the practice cannot be too highly commended.

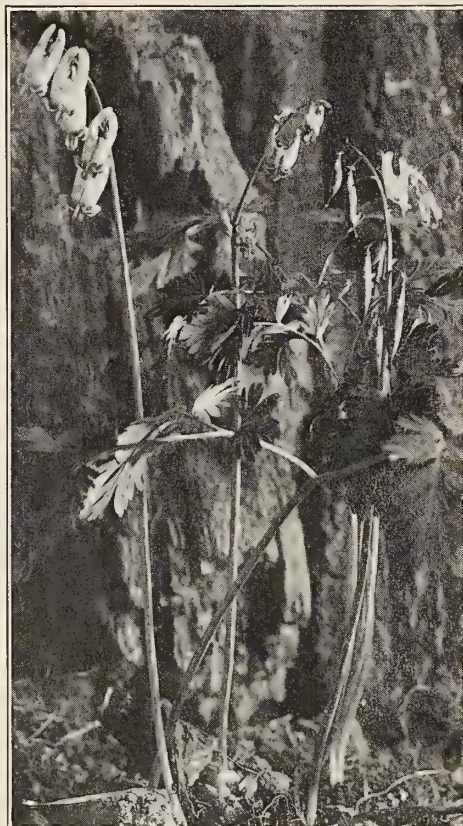
It is by no means a difficult matter to form a small school herbarium made up of the flowers growing in the nearest woods adjacent to the school building. Plenty of thick brown wrapping-paper



FALSE BEECH DROPS

Sometimes called Pine Sap and a member of the Indian Pipe family.

plants of a convenient size. In arranging them between the blotters, care should be taken to exhibit all the characters of the plant possible, so that when the specimen is finally dried it may be intelligently studied. When a sufficient number have been preserved and arranged in "botanical folders," they may be kept in drawers or cases usually available for such purposes. Each specimen should be clearly and properly labeled, the label tersely recording all that a botanist usually demands to know about any particular specimen. For example, the common English name and its scientific name should appear first on the "label"; next, the *place* and *date* of collection; third, the name of the collector, followed by a complete, though brief and accurate, description of the colors of the leaves and flowers and associated structures. Finally, any additional data may be briefly recorded on such a label under "Remarks," as, for instance, the character of the soil and the surroundings where the specimen was obtained.



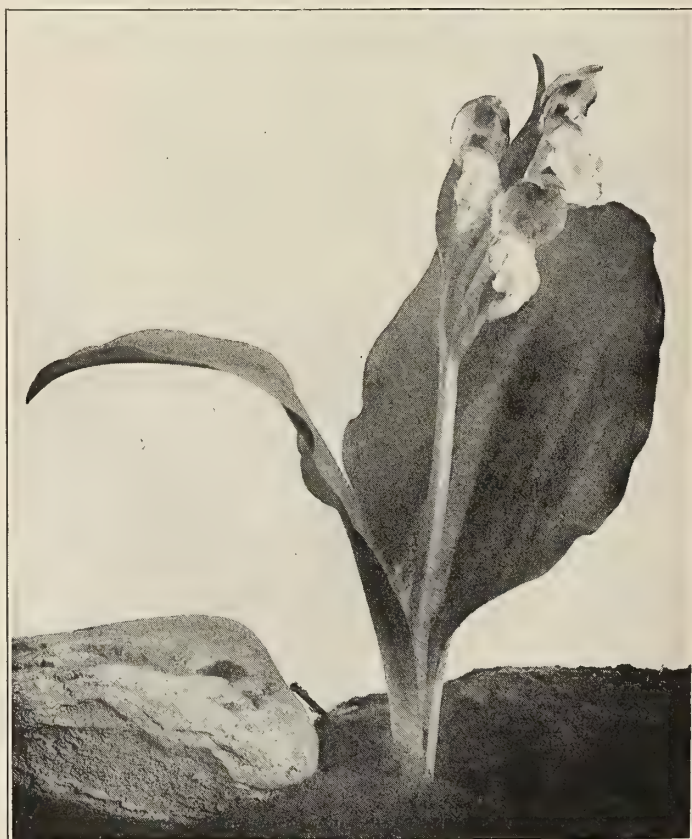
DUTCHMAN'S BREECHES

An early comer in the summer woods and one of the most loved and familiar of our forest flowers.

or, better still, sheets of thick white blotting paper, with some pressing device, is all that is required for the preservation of ordinary forest

Teachers in our public schools should be encouraged to form such collections, and to interest their pupils in bringing in plants and flowers growing in the neighborhood. The information gained is of great value and benefit, for through such study an active love of nature is often inculcated in children. An interesting point of difference in nature-study classes here and abroad is that the economic and commercial aspects of such instruction appeal to classes of American boys and girls, while in most of the European schools it is the scientific side of the study and collecting that commands the closest attention of the pupils.

Very recently the author has received some eight letters from school children of Prof. C. A. Hollingshead's school in Tirana, Albania, and this fact is especially well exemplified in them.



SHOWY ORCHIS

A little aristocrat of the woods, with its glossy, green leaves, silver beneath, and its flowers of pinkish white, delightfully fragrant.

The Forests of Czechoslovakia

How Our Little Sister Republic Is Solving Some of Her Forestry Problems

BY NELSON COURTLANDT BROWN

TUCKED away in the shadows of the Carpathian Mountains and the Bohemian forests, and rapidly recovering from the rack and ravages of the recent

World War, lies the little sister Republic of Czechoslovakia—a harsh-sounding word in English, perhaps, but inbred in it are traditions of a race buffeted about by the storms of European politics and conflicts, but still retaining its integrity, its language, and finally rewinning its independence, lost in the great battle of the White Mountain, in 1620.

Many bonds, aside from sympathy, keep this little republic of 13,000,000 fearless people in close touch with us all. Led by an American professor, the people of Bohemia, in a swift and powerful stroke, broke away from their conquerors and ancient enemies, the Austrians, in a bloodless revolution of October, 1917. This same professor, now President Masaryk, has built up, in a short space of time, an organization patterned in many

ways after our own. The people of the new republic have laid down a forest policy which in some respects we may well emulate in this country. While we are dis-

cussing our Capper and Snell bills and arguing about the part our forests shall play in the economic welfare of our nation, our little sister republic is taking "the bull by the

horns" and solving a similar situation in her own way.

All of the Crown lands of the Hapsburg family of Austria have been automatically seized and taken over by the new régime. These comprise the bulk and the best of the wooded lands of the new republic. The large estates belonging to the noble families of former enemy states or to the former imperial family have been taken over without any compensation, as far as this does not interfere with any provisions in the Peace Treaty. All large estates in excess of about 700 acres in extent were taken over immediately following the revolution.

Nearly 30 per cent of the total area in the new republic is made up of forests—an area as large as one-third of the State of New York. The total area of the new republic is 56,316 square miles.

The great economic problem facing the new republic was the very burdensome rate of exchange which existed from the outset. Even today the Czech crown, normally worth about \$0.20,



A WINTER SCENE IN ONE OF THE PEDUNCULATE OAK FORESTS

Many of these old oak trees are from 300 to 500 years of age and are used for veneers, furniture, wood carvings, and other specialized purposes. Note the mixture of spruce and silver fir trees as a second story in the old forest.

is now worth only about \$0.03. They needed many raw materials to keep their great industrial plants operating, particularly cotton and food supplies. The only commodities they had to offer for export as against their heavy imports were beet sugar and the products from their forests.

The annual lumber cut from this new republic is about 2,544,000,000 board feet, in addition to an equal amount of wood expressed in terms of fuel wood. There was a great demand for all of the timber available for export from Czechoslovakia. Fortunate in its central location, it has been able to export successfully to Germany, France, Holland, England, Italy, Switzerland, and still later to Austria and Hungary. In order to obtain revenues for the maintenance of the government, a heavy export tax was placed on all the forest products sent out.

The bulk of the lumber product of Czechoslovakia is Norway spruce, called whitewood—perhaps from 35 to 40 per cent being composed of this species alone. The remainder is largely Scotch pine, called redwood in the English lumber markets, which comprises about 25 per cent of the total cut, the remainder being made up of silver fir, oak, beech, and very little larch and ash.

In the eastern section of the country, called Slovakia, the economic life of the people is intimately associated with the forests, most of the people being employed in lumbering, lumber manufacturing, and pulp and paper manufacturing. In this section whole villages are constructed of wooden houses, an unusual sight anywhere in western or southern Europe, and many of them are of the log-cabin variety.

On account of its location, with Germany on the north, Poland on the northeast, Rumania and Hungary to the east, and Austria to the south, Czechoslovakia is in an excellent position to trade off its surplus lumber and forest products in return for food and many other commodities which its factories require. A great surplus of beech has always existed in Slovakia, and the bent-wood furniture industry and trade have been developed with remarkable success, a large volume of bent-wood chairs, etc., being sent to Germany, Spain, Italy, and even to South America.

That portion of the former Austro-Hungarian Kingdom now included within Czechoslovakia was one of the most important sources of lumber export of that kingdom, which held a place next to Russia and Sweden in its im-



A TYPICAL CZECHOSLOVAKIAN FOREST UNDER MANAGEMENT

The chief species are Scotch pine, also called redwood (*Pinus silvestris*), with a mixture of silver fir. Note the dense and thrifty young trees that have been seeded up from mature trees among the overwood. This is an adaption of the shelterwood system of management, which, under certain conditions, proves to be most successful. This means a gradual removal of the mature trees, during which a new young forest is seeded naturally and developed, the rotation being cut down to a minimum.



A SPLENDID EXAMPLE OF NATURAL REFORESTATION

This is silver fir (*Abies pectinata*). Some of the best examples of natural regeneration of forests may be seen in the Bohemian and Slovakian forests. Wherever possible, natural reforestation is secured, as it is so much cheaper than to plant the trees after a cutting has been made.

portance in the great lumber-export trade to the heavy consuming sections of western Europe and the countries surrounding the Mediterranean. From this section the Danube and its tributary rivers were used as great highways of commerce. Rafts and barges in great numbers were sent to such ports as Galatz, Constanza, and Braela, at or near the mouth of the Danube, on the Black Sea, from which the lumber was exported, the logs being manufactured and shipped in small vessels to the great consuming nations of Italy, Greece, Spain, France, England, and the north African countries. This business was largely handled by the large and powerful Austro-Hungarian organizations in Vienna and Budapest. With the removal of these interests from the export trade and the heavy depreciation of Austrian currency, a new organization had to be built up within the Czechoslovak Republic. This situation has been handled in masterful fashion by the new government at Prague, and the country is laying the foundations of a very prosperous and active trade in its surplus lumber and other forest products.

The government has assumed the right to impose cutting restrictions on privately owned forests as well as on the state forests, which were largely made up of the old Hapsburg Crown Forests. It also exercises regulatory measures in an active and co-operative fashion, in order

to maintain the forests owned by the communities and municipalities as well as the private corporations and even individuals. In this way the country is assured of a continuous and fair national forest policy, with the national welfare, both for the present and future, uppermost in mind.

The government has determined definitely what the supply available for export amounts to, namely, about 20 per cent of the total production of the country, in round figures. On all lumber moving to export destinations a tax is imposed at the border, and this accrues directly to the benefit and support of the government. When the lumber market was exceedingly active, during the years 1919-20-21, the little republic was able to take advantage of a very favorable condition, and, with the return of prosperity and the buying power of the lumber-consuming sections of Europe, this will continue to play a very important part in the financial returns of the national treasury. The actual export levy or tax varies from time to time with the change in relative exchange values of the foreign currencies and with the activity of movement in each direction.

The systems of forest management have been built up as a result of long experience. Some of the most productive forests to be seen anywhere in Europe can be found

in Bohemia and Slovakia, where the efficiency of forest management has attained its maximum. Many net yields of from \$2 to \$6 per acre per annum equal some of the best examples of the well-known forests of Switzerland and Germany. The Norway spruce is handled on a rotation of 80 to 120 years, the pine is handled on a rotation of about 90 to 100 years, and the silver fir from 100 to 125 years. The beech requires from 125 to 150 years for proper development, and the oak still longer.

With the war, lasting for over four years, and with



A YOUNG AND GROWING STAND OF EUROPEAN BIRCH

One of the trees of lesser importance in Czechoslovakia. The wood is used for turning purposes, novelties, toys, woodenware, and similar things.

the successive attempts of great Russian armies on the eastern frontier, it is surprising that the effects of this war are not more disastrous and destructive to these forests. As a matter of fact, these forests were held back as a reserve for an extreme emergency, and it is generally supposed that the Hapsburg family saw to it that its own forest domain was not injured to the extent that some of the other forests were in making cuttings for the fighting armies at the front and for the maintenance of the great camps. On three different occasions the Russians nearly attained the summit of the Carpathian

Mountains, which lie on the northeast boundary of Czechoslovakia. On one occasion they did attain the summit of the divide, and there is a battlefield containing 150,000 dead within the confines of the great spruce and fir forests of the higher reaches of the Carpathians.

It is interesting to note that about 75 per cent of the total forested area of Czechoslovakia has been exploited and managed systematically, according to the best forestry practices, yielding a regular and steady income, and that in eastern Slovakia and Carpathian Russia there are over 1,000,000 acres of practically inaccessible virgin forests which heretofore have not been brought under any effective system of management. In this remote region are to be found small communities, the homes of which are constructed of logs similar to those in remote northern Russia.

After the downfall of the Dual Monarchy the new republic succeeded to the ownership of forests held formerly by the reigning family of the monarchy as well as those of Hungary, amounting in all to 1,555,045 acres, representing 13.5 per cent of the total forest area. As most of the forests were held by entailed estates of the nobility, provision was made by the Land Reform Law for the expropriation of the large holdings, bringing the total forest domain of the state to about one-third of the total forested area of the country. In order to improve the management and exploitation of the private forests it is now sought to unite the small timber-owners into co-operative forestry proprietors. In this way the forests are to be protected against their various enemies, such as fire, insects, etc., the clearings reforested, and waste places reconverted into forests. The republic promotes or subsidizes numerous nurseries for the production of seedlings.

A very large share of the credit for the magnificent work which Czechoslovakia is doing in her forestry program is due to Councillor Doctor Karel Siman, Chief and Directing Head of the Forestry Department of the Czechoslovak Ministry of Agriculture at Prague. The people, moreover, are generally well informed regarding the importance and value of their forests and the proper handling of them. This is reflected in a splendid educational policy. There are two colleges of forestry, namely, at Prague and Brno, where directors and inspectors of forestry are educated. In addition to these, there are intermediate forestry schools, with a four-year curriculum, for the education of administrative officials, established at Pisek, Zakupy, Hranice, and at Banska and Stianica. In addition to these, there are three special schools for the training of forest rangers and guards at Domazlice, Jenice, and Lipt. Hradek. There are three large silvicultural experiment stations maintained at Prague, Brno, and at Banska Stianica.

The new republic is to be indeed congratulated on the notable progress made in forestry within the comparatively short period of time that it has enjoyed a national existence, since the close of the great conflict.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

Underwriting the Forests

FOREST conservation has been advanced another step by the recent action of the Home Insurance Company of New York and its allied companies in offering insurance on forest properties. Not that these companies are the first to provide such coverage. The Globe-Rutgers has written some business of this sort for several years past.

This type of insurance, however, is not adapted to adequate development on a one-company basis. The possible heavy loss liable to follow from one fire as a result of localized adverse climatic conditions makes it precarious for any one company to carry more than a very limited amount of insurance in one locality. A pooling of their interests by several companies for purposes of a wider distribution of the risk under a unified underwriting, inspection, and adjustment policy makes possible the more general insurance of property exposed to such localized hazard and at a somewhat lower rate.

It is in this respect that the entrance of this group of companies into the field of forest-fire underwriting is especially significant. Their underwriting resources are very large and the effect on other companies cannot help but weigh on the side of their entering this field also.

For the present, this class of coverage will be taken by the companies named only in New England, New York, New Jersey, and Pennsylvania. This is as one would expect, for forest protection is undoubtedly more nearly upon an insurable basis there than elsewhere in the country, so far, at least, as concerns privately owned forest lands.

The rates for this insurance vary from \$1.25 to \$2.50 per hundred dollars of insurance, according to the hazards surrounding the given property, such as expo-

sure to slash and steam railroads on or adjoining the property, and to lumbering operations or blueberry lands adjoining.

On the other hand, credits from the base rate of \$1.25 are allowed where only hardwood growth is insured and also when approved fire patrol is maintained. No insurance will be written on other than merchantable growth, six inches and over at breast height, and so situated as to be salvaged if burned, or on coniferous or mixed growth while being operated or within five years after being operated if the slash therefrom remains on the ground; nor will insurance aggregating more than \$25,000 be written on properties in the same immediate locality and likely to be swept over by a single fire.

This class of protection will not be of any value to the owner of cut-over land who wants to grow a new forest crop upon it, but who hesitates to assume the risk of having this investment wiped out by fire during the many years that it is growing to the size of minimum merchantability established by the companies as insurable. It will, however, bring the companies into contact with forests and forestry. We may look for the various state forest protection agencies to establish prompt and intimate contact and co-operation with the insurance companies, in whom they should recognize a strong and influential ally.

We may likewise confidently expect that the companies will be quick to recognize the ability of a state's protective organization to control fires in young as well as old growth, and to extend its underwriting to all classes of forest property as rapidly as conditions warrant.

New Hampshire Passes Tax Measure

NEW HAMPSHIRE has tackled the forest tax problem and has made a good start. The state legislature has passed an act to govern the taxation of growing timber on woodlots. This act makes it possible for any owner of forest land which is valued at not more than \$25 an acre, on the average, and which is stocked or is to be stocked with young trees, so as to promise a prospective yield of 25,000 feet to the acre, to have not to exceed fifty acres of this land listed as classified forest land. Once classified, standing growth on the land shall not be taxed except as the owner cuts the timber, in which case he shall pay a tax at the same rate and valuation as other timber of the same character is taxable.

Relief is provided for the cutting of wood for the owner's own use up to a stumpage value of \$50.

When the growth on the land thus classified reaches an average figure of 25,000 feet of merchantable timber to the acre, the land upon two years' notice, is transferred from the classified list to the general property tax-list, unless the owner shall elect to reduce the volume of growth below the limits specified. An owner may withdraw his land from classification at any time by the payment of regular land and timber tax, and the assessors have authority to withdraw classified forest land when, in their judgment, it becomes more valuable for other uses.

Although the act is limited in its application, it never-

theless should be a strong factor in stimulating woodlot-owners in the state to set apart definite portions of their farms for the growing of timber crops. Any encouragement which can be given the farmers to grow timber crops along with food crops carries tremendous possibili-

ties. Of our 371 million acres of forest land in private ownership, 150 million acres, or 40 per cent, are on the farms. Once the woodlots throughout the nation are given fair taxation, one major trench in the campaign for new forests will have been won.

Down in Georgia

IN NO state in the South proper does forest depletion appear to be proceeding at a more rapid rate than in Georgia. Two of its most important industries are at stake—lumbering and naval stores. These are industries which for years have played an important part in the economic life of the state. Until recent years, they furnished employment to more wage-earners than any other manufacturing industry in Georgia.

It is unfortunate for the prosperity and development of the state that the waning of these two ranking industries is taking place at a time when the state's leading industry, the manufacture of cotton goods, is hard hit by the ravages of the boll weevil. The decline of these three industries simultaneously will be a setback to the state which will take years to overcome. Already unhealthy conditions are in evidence, and while the forests are rapidly being exhausted they have, nevertheless, rescued many cotton-growers from bankruptcy in some sections of the state. The farmer, dependent upon his cotton crop and finding it devastated by the boll weevil, has been turning to his woodlot as his main means of support.

During a period of less than a decade and a half, the production of lumber in Georgia has declined practically 50 per cent—a loss to the state of over \$13,000,000 annually in the sale of lumber alone. During the same period the state has lost 1,300 sawmills, or 65 per cent of the number operating in 1909. In the naval-stores industry the shrinkage has been still more marked, that industry having declined in productive vigor 75 per cent in the last twenty years.

There are twenty million acres of forest land in the state, all of which has been cut over with the exception of about one million acres. The extent to which these conditions have affected the wage-earners of the state is indicated by the fact that in 1900 the primary forest industries of the state supplied employment to 38,827 wage-earners, and in 1920 to only 23,141—a decrease of 40 per cent. In both 1900 and 1910 the forest industries of Georgia supplied employment to more persons than all other industries combined, excluding the manufacture of cotton goods.

The situation is much more serious than the people of the state appreciate. If its nineteen million acres of cut-over land were being developed agriculturally, the future

would hold out greater promise; but the area of land in farms has actually declined in the past ten years. The greatest enemy of the future of these cut-over lands is the widespread public apathy and ignorance in respect to the evils of forest depletion within the state.

But the picture is not all dark. There are clear evidences of a public awakening, for which the Georgia Forestry Association, aided by a number of the leading newspapers of the state, deserves first credit. In less than two years this association has crystallized a statewide sentiment for action in behalf of Georgia's forest lands. At a meeting held in Macon on May 29, the Governor, prominent newspapers, representatives of the state's forest industries, the State College of Agriculture, and the State Department of Agriculture pledged the association their support to a definite forest program for Georgia, which will include a forest department and an occupational tax on the forest-producing industries. The measure will come before the state legislature this summer.

Opportunities for state development and progress by enlightened utilization of forest land are unexcelled in Georgia. Its wood-producing power is tremendous if only put to use instead of being abandoned as an old mine. Speaking before a Georgia meeting recently, Mr. Austin Cary said:

"My own belief is, and that has thirty years' experience behind it, during which I have worked in every timber region of the United States and seen the forests in several European countries, that no region in the world probably has greater natural facilities for producing timber values than the district centering on the Okefinoke swamp. * * * Longleaf and particularly slash pine characterize this region, the latter, in my opinion, a species which will be recognized in the future for the combination of utility in its products, for its readiness of reproduction and rapidity of growth, as one of the most valuable trees on the earth's surface."

If the Georgia Forestry Association can continue to inspire in the citizens of the state some such appreciation and confidence of the value of their forest soils and their native species, it will have more than half solved the task before it.

What Are Forests, Parks, and Game Refuges?

Steps Taken by National Parks Committee to Formulate a Definite Policy for Creation and Administration of These Areas

MUCH confusion and misunderstanding exists in the public mind as to the essential differences between federal or state forests and parks. The place of game refuges in relation to forests and parks is likewise not always clear. In an effort to establish clearly understood and commonly accepted standards for the establishment and administration of these public areas, the National Parks Committee, a voluntary council composed of representatives from some twenty-eight different organizations, has adopted a set of definitions which it hopes will serve as the basis for a permanent policy.

The committee does not consider its report as final, but is seeking to improve it through constructive suggestions from persons and organizations interested in the respective movements. Believing that the proposed policy is of deep interest to readers of *AMERICAN FORESTRY*, essential extracts from it are quoted below:

"Any policy dealing with national and state parks, forests, and game refuges must be, at bottom, a land policy. To be sound, it must rest upon the use of the entire land in the country for the purposes to which each portion of it is best suited in filling the essential needs of the people. These needs include not only the material measurable ones, food and shelter, but the intangible spiritual ones which come under the head of recreation.

"Thus we must have not only farm lands to produce food, forest lands to produce wood for houses, for newsprint, and for a thousand other indispensable commodities, but also park lands for recreation. In fact, the recently recognized demand for recreation, particularly outdoor recreation, is increasing so rapidly, as its economic importance comes to be realized, that the lands heretofore set aside as parks do not suffice, and the need must be met by utilizing lands primarily used for forest production. A further land requirement is the maintenance of a part of the natural flora and fauna, undisturbed by outside agencies, for education and scientific research. This requires the setting aside and preservation of certain areas, selected so as to represent the more important types of plant and animal life, and, so far as may be, the maintaining of the balance of nature on these areas.

"The tendency is for land eventually to be used for the needs to which it is best suited, but this too often comes about only after a long and wasteful process of trial and error, during which enormous values in natural resources are permanently destroyed. Among the values so destroyed are not only the natural plants and animals so necessary to science and education, but recreational features and vast quantities of timber and minerals. Hence the need for a sound land policy extending to and covering in its scope national and state parks, forests, and game refuges.

"Whenever a particular area could be put to one of several conflicting uses, a decision as to which use shall prevail ought obviously be made in accordance with a consistent policy based on the public interest. Without such a policy, there will be a continuance of the present struggle between those who wish to develop and consume all natural resources as rapidly as possible, often regardless of the future, and those who want to make parks wherever possible, regardless of legitimate needs for the resources which would thereby be withdrawn from use. The former argue that the general welfare requires the opening up of all regions to their fullest economic use; the latter accuse their opponents of selfish materialism, and claim that the public has a right to do as it pleases with its lands and resources. There is danger from both sides. The over-rapid exploitation of new regions in the past has brought a reaction which is reflected in the strong sentiment for parks and in an oftentimes vague desire to preserve everything, regardless of legitimate needs. It is important to find a solution which can form the basis of a sound public policy.

PARKS

"The purpose in creating parks is to preserve the scenery, the natural and historic objects, and the plants and wild life. The objects are the enjoyment of the people and the aiding of education and scientific study by keeping such areas unimpaired. Thereby certain portions of nature's handiwork will be kept for recreation, for science, and for education, both for this and for future generations.

WHAT NATIONAL PARKS SHOULD CONTAIN

"National parks should contain features *distinctly national in interest*, and should preferably be of considerable magnitude, the size ordinarily to be governed by administrative considerations. The establishment of a national park must depend on the character of the scenic, scientific, or historic features, not upon the opportunity to develop a recreation resort. Herein lies one of the distinctions between national and state parks.

"National parks should be protected completely from any and all utilitarian and commercial enterprises save those necessary for and subservient to legitimate park uses. The scientific, health, esthetic, and spiritual values of national parks will greatly increase as population multiplies and the country becomes more fully settled and more widely appropriated to utilitarian purposes. Judge John Barton Payne, former Secretary of the Interior, says: 'If the national parks may be encroached on for a commercial purpose, sooner or later they will be destroyed.'

"The national parks should be so administered that they

[Continued on page 443]

The Doctor Bill of the Logan Elm

By C. E. BARTLETT

STANDING at the foot of a small knoll, its huge branches spreading their protecting shadows over sight-seers with the same kindliness that they did over the Indians and settlers in earlier years, the Logan Elm still looms as one of Ohio's great landmarks.

But trees as well as everything else get old; and when they become aged they are not so able and capable of holding their own against the elements as when they were young. At any rate, the Logan Elm has almost exhausted its resources for the fight against Nature and has appealed to outside help to continue its battle and lengthen the period that it may stand as an historic mark.

The faithful old tree was not without friends in the Ohio Senate, and when money was needed for the necessary repairs to its damaged constitution, Senator C. C. Chappellear, of the 10th District, presented a bill before the Senate asking for \$2,000 to doctor up the massive elm. Before this bill was presented the budget of Ohio carried a sum of \$500 for the care of the recreation grounds about the tree, but did not provide for the upkeep of the elm itself.

Although the bill in question did not pass, committees of the House and Senate, who apportioned the State's budget for the next two years, made the following provision: \$1,500 for the repairs on the tree; \$500 for additional land; \$600 for the upkeep of the park; \$50 for a custodian and a deficit of \$18.

But why, you may ask, does a tree rate such attention from the public as to receive such an appropriation? The answer is that under this elm a treaty was held by Dunmore with Chief Cornstalk, of the Shawnees, and Logan, the chief of the Mingo tribe, who declined to be present at the treaty, sent a message which was read before the assembled red and white men. This message is today still considered the classic of Indian oratory. That was in 1774; but the message as well as the tree still lives to illumine that early page of our history. Logan's message, simple in language and thought and showing the man's fine character, reads as follows:

"I appeal to any white man to say if ever he entered Logan's cabin hungry and he gave him not meat; if ever

he came cold and naked and he clothed him not. During the course of the last long and bloody war Logan remained idle in his cabin, an advocate for peace. Such was my love for the whites that my countrymen pointed as they passed and said, 'Logan is the friend of white men.' I had even thought to live with you, but for the injuries of one man. Colonel Cresap, the last spring, in cold blood and unprovoked, murdered all the relatives of Logan, not sparing even his women and children. There runs not a drop of my blood in the veins of any living creature. This called on me for revenge. I have sought it. I have killed many. I have fully glutted my vengeance. For my country, I rejoice at the beams of peace. Yet do not

harbor the thought that mine is the joy of fear. Logan never felt fear. He will not turn on his heel to save his life. Who is there to mourn for Logan? Not one."

In making formal nomination of the Logan Elm for the Hall of Fame for Trees, Mr. Frank Tallmadge, chairman of the Logan Elm Committee of the Ohio State Archaeological and Historical Society, says:

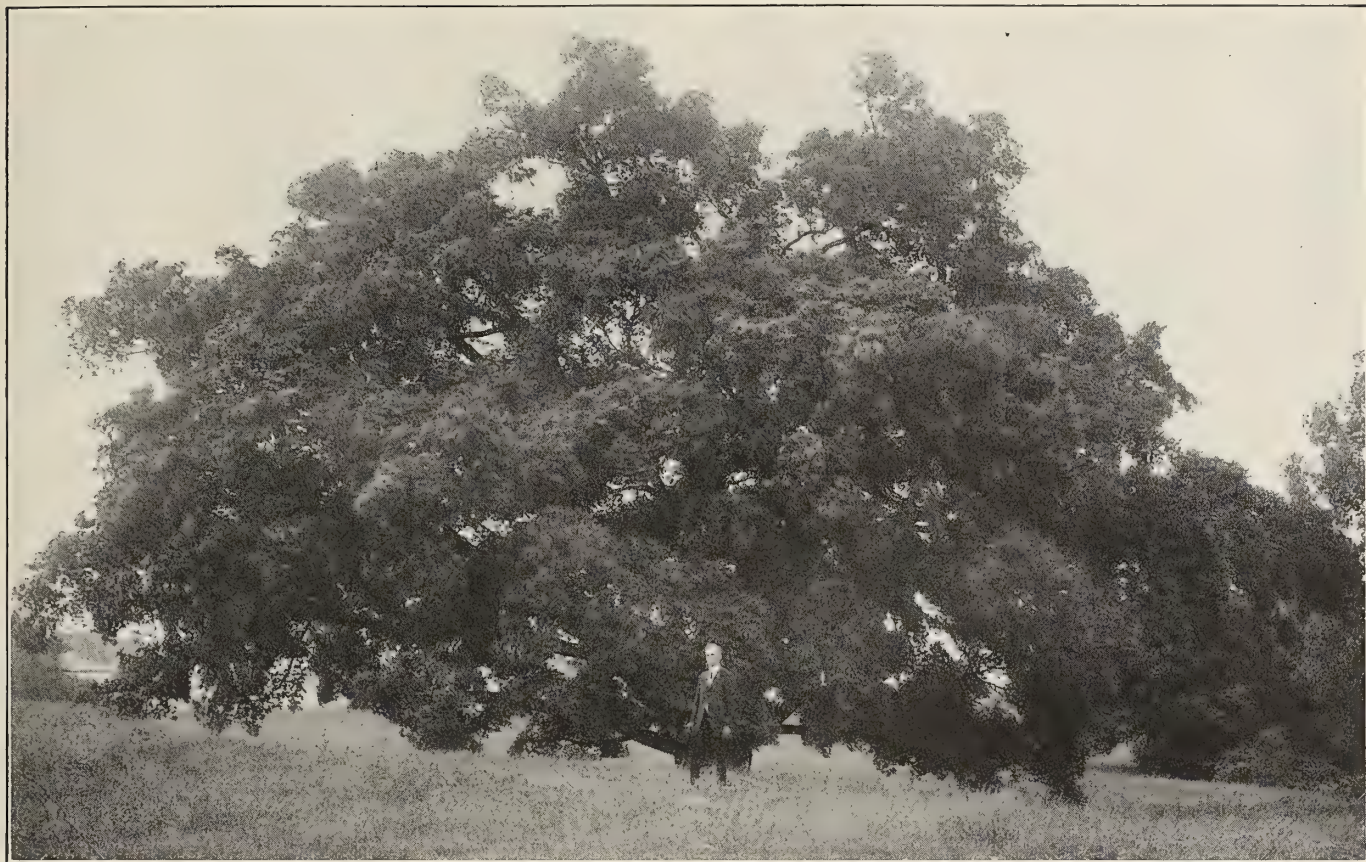
"A small plot of ground, with the Logan Elm in a wedge-shaped corner, was secured by Miss Ruggles, of Circleville, and by her presented to the state through the Ohio State Archaeological and Historical Society about 1912, after

which the elm received its first treatment of any kind, consisting principally of cabling and mulching. The dedicatory exercises were attended by a vast concourse, including many representatives of various Indian tribes, then in session at Columbus. The park at once became the Mecca for students of local history as well as lovers of nature. A shelter-house was erected in the form of an original log cabin. There is also on a knoll above the tree an elaborate memorial, marking the site of the home of the pioneer owner of the land, Captain Boggs, in which three generations were born and reared. This stone has embedded on one side a bas-relief descriptive of an Indian attack on a pioneer's cabin and some early family record depicting the hardships of our forefathers and mothers. Later a handsome memorial was erected to the Indian Chief Logan, upon which is inscribed his message, read



Photograph by H. E. Zimmerman

A CEREMONY OF DEDICATION UNDER THE LOGAN ELM ABOUT 1912, BEFORE IT WAS TREATED AND CARED FOR AS IT IS NOW



Photograph by John A. Coles

THE LOGAN ELM AS IT LOOKS TODAY, SHOWING THE SPLENDID RESULT OF THE CARE AND TREATMENT GIVEN IT BY THE STATE. IT WAS A LARGE TREE AT THE TIME OF THE TREATY, 150 YEARS AGO, THE TOP PART BEING BLOWN OFF BY A STORM SOME TWENTY-FIVE YEARS AGO. IT IS OWNED BY THE STATE OF OHIO AND IS CARED FOR BY THE COMMONWEALTH IN ITS ANNUAL BUDGET. THE TREE HAS BEEN NOMINATED FOR THE HALL OF FAME BY FRANK TALLMADGE, OF THE OHIO ARCHÆOLOGICAL SOCIETY AT COLUMBUS, CHAIRMAN OF THE LOGAN ELM COMMITTEE

at the treaty, with a bas-relief in copper of the Indian head adopted by the Federal Government and placed on the five-cent coin; also a copper plate of the Logan Elm, giving its dimensions, intending to illustrate for all time the immense size and beauty of the tree. This stone, with its base, was presented by the near-by residents, including the county-seat of Circleville, and reflects credit on the donors.

"There was also a memorial placed in the park by the descendants of Cresap, whom all historians, based upon affidavits of some officers of Dunmore's army (including George Rogers Clark) exonerate, affirming that Logan was mistaken, the murders being committed by one Great-house when Cresap was seventy miles distant.

"A register kept in the cabin indicates the number of visitors the past two seasons to be twenty thousand. Historical and family organizations meet in the park and are beginning to donate trees. An avenue of elms is proposed. Secretary C. B. Galbreath, of the State Society, has transplanted twenty seedlings from the elm, which are doing well, some of them twenty inches in length, both above and below the ground.

"The old elm will be recabled and mulched this summer. We are assured by those competent to express an opinion that the tree will hold its present beauty and vigor for fifty years, while some life will exist fifty years thereafter."

THAT LONG-LEGGED GUY

By Charles V. Breverton.

Section hand a workin' on a railway track,
Built him a fire, then turned his back.
Th' foreman phoned fer th' extra crew.
Jiminy Christmus! I never seen such a stew:
Fences burned down and crops burned up;
Th' ground was as bare as a Mexican pup.

Th' boss come a rarein' on number four.
Ten miles away you coulda heard him roar.
The gang all cringed when they seen his eyes,
For th' fire had burned a coupla railroad ties.
"Git on th' job an' save th' bridges;
Ne'mine th' rest; let 'er go to th' ridges."

Them wuz th' orders. We all jumped in,
'Cause when th' boss is mad he's meaner'n sin.
But a long-legged guy in a old white hat,
Come a chousin' around like he smelled a rat.
Him an' th' boss got to talkin' a lot,
An' something happened—I dunno what.

We had to surround thet doggoned fire.
'Twas th' first time, I believe, I ever earned my hire.
Th' boss got out an' made us work like niggers;
Fer th' next three months I'll be chock full o' chiggers.
Thet long-legged guy in th' old white hat,
He musta told thet boss right where he was at.

Staunton's Winning Essay

The local chapter of the D. A. R. at Staunton, Virginia, offers annually a medal to the student writing the best essay on some historic subject. This year, writes Miss Neva R. Selman, this custom was slightly departed from and the subject assigned was "Forestry as Related to American Patriotism"—the thought being that Staunton's boys and girls would be better citizens for having given serious thought and study to the preservation of our forests, in its patriotic aspect. The children made fine response, and the winning essay, written by Charles D. Ker, was really excellent. His comprehensive grasp of his subject is indicated by the following, taken from the essay:

"Breathes there the man, with soul so dead,
Who never to himself hath said,
This is my own, my native land!"

"Can it be imagined for a moment that this fervid patriotic utterance could have reference to a land of mere bricks and mortar, a man-made land, rather than a land of great open spaces and mighty forests, a land of sunshine and shadows, where the green carpet of the rolling meadows is succeeded by the cool and quiet shadows of the mighty forests! And could the fire of patriotism be kindled in any heart by a vast, unbroken, denuded, treeless tract, so that it would spontaneously sing forth with pride, 'This is my own, my native land!' Or would the village blacksmith shop have had any really poetic setting had it not stood 'under a spreading chestnut tree.' And yet, under the ruthless hand of man, the mighty forests have been, and are being, devastated, not merely for man's necessary use, but by reason of man's ignorance and carelessness.

"No man who really loves his country would for one moment cast any obstacle in its march of progress, or do aught but encourage the proper utilization of the products of the forests as well as the products of the field, but it is equally true that no patriotic man can fail to view with alarm a wasteful and unnecessary destruction of the forests. The care and protection of the forests is not for the purpose of preventing man from making use of their products, but of affording the maximum production with the minimum wasteful destruction. But the purpose and object of those who advocate the preservation of the forests by the application of the rules governing proper forestry is not merely to preserve their beauty and grandeur beneath whose quiet, cooling shades poets may sing or patriots may worship, but even from the standpoint of strict utility and national prosperity, and aside from the standpoint of these sentimental considerations, it is absolutely necessary that the forests be handled in a prudent, careful, and guarded way, so that the waste of today may not bring the want of tomorrow.

"Then, too, it must be borne in mind that a treeless land is an arid land. The care and preservation of the forests is essential, that the fields and meadows may continue to be green and productive by the natural regulation of the supply of moisture.

"It must be borne in mind that the destruction of a forest may be an extremely rapid process, whereas the growth of forest trees is, under the most favorable conditions, necessarily slow. A carelessly started fire may wipe out in a day vast tracts of valuable timber that it has taken years to grow, and will take years to replace.

"True patriotism springs from the heart and evinces a sincere and deep love of country, and not merely an acquiescence in its form of government and observance of its laws and statutes. The true patriot loves his country for its beauty, its productiveness, its progress, and prosperity. And the true patriot will show his love of country and patriotism not merely by empty words, but by deeds. There can be no question that active participation in the care and preservation of the forests, in the planting and care of trees, in perpetuating the beauty and promoting the

prosperity of his country should be the duty and pleasure of every patriotic citizen. Joining with the great army of patriots in this land of liberty, he should

"Let music swell the breeze,
And ring from all the trees
Sweet freedom's song."

More Land for Eastern National Forests

The National Forest Reservation Commission has authorized the purchase of 11,457 acres in eight Eastern States for National Forest purposes, according to the United States Forest Service.

The most signal purchase consisted of ten parcels, with a total area of 5,309 acres, in McKean, Forest, and Warren Counties, Pennsylvania, within the Allegheny National Forest. The area now being acquired by the government on the headwaters of the Allegheny River is nearly 110,000 acres.

The purchase of 1,015 acres was authorized as an addition to the Monongahela National Forest, chiefly in Pocahontas and Pendleton Counties, West Virginia. This forest is largely designed to protect the headwaters of the Monongahela River, the chief southern tributary of the Ohio River.

The purchase of 877 acres located on the headwaters of the James River, in Virginia, was authorized, and in North Carolina the purchase of 1,585 acres, largely on the waters of the Catawba River. In Tennessee the purchase of 335 acres was authorized in Green County, as an addition to the Pisgah National Forest. Two hundred and sixty-seven acres in Oconee County, South Carolina, and 129 acres in Rabun County, Georgia, were approved for purchase as parts of the Nantahala National Forest. This forest protects extensive water-power developments on the Savannah River, from which power is distributed over an extensive area in upper South Carolina and Georgia to a large number of cities and towns and numerous industrial enterprises.

"AIN'T NATURE WONDERFUL!"



Donahey—In the Montreal Daily Star

John E. Rhodes Dies

John Edgar Rhodes, for the last eight years secretary-manager of the Southern Pine Association and widely known throughout the lumber industry and in business circles of the United States, died early Saturday morning, June 2, at New Orleans. Mr. Rhodes had been ill for the last two months. However, apprehension as to the seriousness of his illness was not felt by his associates until last Monday, when his condition took a turn for the worse. Death was due to a complication of diseases.

John E. Rhodes was born at Kent, Ohio, July 9, 1874. His parents were James and Martha Rhodes. When he was a boy he moved with his parents to Brainerd, Minnesota, where Mr. Rhodes started in newspaper work at an early age, and he eventually became a writer on the *Minneapolis Tribune*. One of his big stories while connected with the Minneapolis newspaper was covering the Leech Lake Chippewa Indian uprising in Minnesota in 1898, when Mr. Rhodes secured the first and only story of the fighting between government troops and settlers on the one side and the Indians on the other.

Leaving newspaper work in 1898, Mr. Rhodes became secretary-manager of the Northern Pine Association, serving in that capacity for ten years. Again, in 1912, Mr. Rhodes harkened to the call of the newspaper life, when he became publisher and editor of the *Tacoma (Washington) Tribune*.

In January, 1915, Mr. Rhodes was elected secretary-manager of the Southern Pine Association and came to New Orleans at that time to open up headquarters of the association and perfect that organization.

Mr. Rhodes was recognized as one of the best-informed men in the lumber industry of the country, having a broad and accurate knowledge of virtually all phases, branches, and conditions in that business, and his counsel and advice have been sought frequently by many lumbermen and associations outside his own organization. He was known as a man of broad vision and forward-looking attitude and always mindful of the public's interest in his handling of the policy of his association. For many years he had been an advocate of forestry and he was one of the leaders in the forestry movement in Minnesota and the Great Lakes States, as he had been in the South.

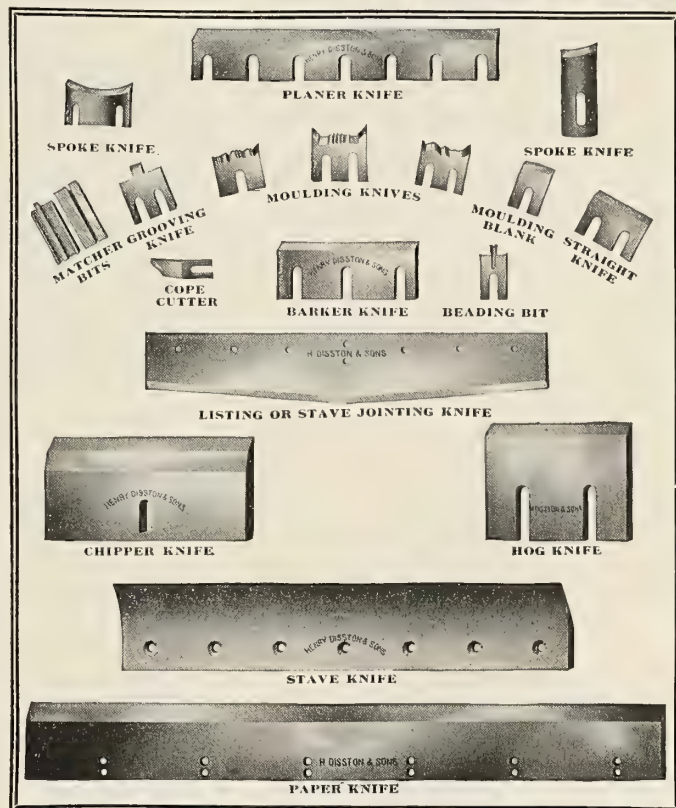
Weeks Law Support in the Keystone State

The Legislature of the State of Pennsylvania, recognizing the necessity for securing and strengthening the operation of the Weeks Law under the full appropriation of \$2,000,000 annually, as originally provided, recently passed comprehensive resolutions which, approved by Governor Pinchot, were transmitted to the President and other high officials of the Federal Government.

While expressing appreciation of the fiscal conditions following the war, which justified the curtailment of this annual expenditure temporarily, the resolutions urgently recommend, as vital to the welfare of the nation, increasing liberality of appropriations for the purchase and administration of lands under the provisions of the Weeks Law, calling attention to the virtual famine threatened by the failing timber supply in the Eastern States and the resulting expense of transportation.

Pennsylvania herself has purchased and is administering as State Forests more than 1,130,000 acres of land, chiefly on the watersheds of navigable rivers, and, in order to more nearly meet the need of forest restoration on the remaining 13,000,000 acres of land chiefly valuable for forest production, she has offered to the legislature an amendment of the State Constitution which will authorize a bond issue of \$25,000,000 for the purchase of approximately 5,000,000 additional acres of land for State Forests.

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DISSTON

SAWS TOOLS FILES

PENNSYLVANIA'S RECORD
PLANTING

More than 6,200,000 forest trees were planted by private owners of forest land in Pennsylvania during the spring of 1923, according to an announcement made by Major R. Y. Stuart, the State's Chief Forester. This is the largest number of trees that have been planted on privately owned forest land in any one year in the history of the state. These trees will reforest about 6,000 acres of land that would otherwise remain idle.

Forest trees were planted this spring in every county of the state. Berks County leads all the other counties in having the largest number of forest-tree planters. One hundred and eight of them set out a total of 335,000 trees. The largest number of trees were set out in Indiana County. Twenty-seven different owners of forest land planted a total of 400,000 trees.

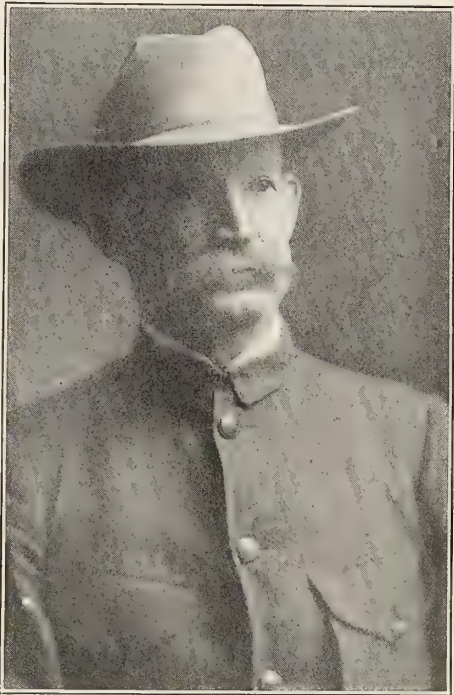
The 1,600 private planters that set out trees this spring included farmers, lumbermen, water companies, mining companies, municipalities, and other organizations interested in forest-tree planting. The mining companies planted 1,140,000 trees, water companies 675,000, and municipalities over 550,000. The remaining 3,350,000 trees were planted by small timberland owners scattered all over the state.

Major Stuart is impressed with the way forest-tree planting is progressing. During the last 15 years more than 25,000,000 trees, grown in the nurseries of the Department of Forestry, were set out on privately owned land, and during the last 20 years about 35,000,000 trees were planted on the state forests. Applications for more than 1,000,000 trees have already been filed with the Department of Forestry for trees to be

planted during the spring of 1924. According to present plans, the total annual output of the state forest nurseries will be 20,000,000 by 1925.

DEAN OF FOREST SUPERVISORS
SUCCUMBS

Col. Willis M. Slosson, the dean of forest supervisors, died Sunday, May 20, at Los Angeles, after an operation. He was 74



COL. WILLIS M. SLOSSON

years old, having been born in Oswego, New York, May 23, 1849. Colonel Slosson claimed the distinction of having been the first forest supervisor appointed when the forest reserves were created and adminis-

tered by the Department of Interior. He was appointed by President McKinley under date of May 14, 1898, the appointment taking effect July 1, 1898. A few months later he came west and assumed charge of the eastern division of the Pine Mountain and Zaca Lake Forest Reserve, in Santa Barbara and Ventura counties, with headquarters at Hordhoff, in the Ojai Valley Ventura County. Later, this and the Santa Barbara reserves were united as the Santa Barbara National Forest, with headquarters at Santa Barbara.

As a pioneer of forestry, many strange and intricate problems came before Colonel Slosson, but he was able to solve them to the satisfaction of the settlers and in a manner that endeared him to his rangers. Although it is nine years since he left the service, he was not forgotten by the men who served under him, few of whom are now in the Forest Service.

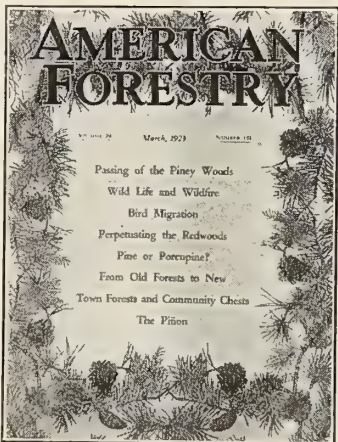
In September, 1913, Colonel Slosson suffered a partial sunstroke while leading a fight against a forest fire in the mountains near Santa Barbara. A few months later he resigned, his resignation taking effect June 30, 1914. At that time he made the following statement, quite characteristic of the man:

"I am not sorry at all for this 16 years' experience, although if I had kept out of the Forest Service I would probably have been better fixed financially today. But I believe I have accomplished something for the future and, at least, made friends for the Forest Service among the people in and about the Santa Barbara National Forest."

In the fall of the year he resigned as forest supervisor Colonel Slosson was elected mayor of Santa Barbara, serving two years as the last formally elected mayor of that city.

Every tree lover should receive the beautifully illustrated monthly magazine American Forestry. Write to the Office, 914 Fourteenth Street, Washington, D. C., for a sample copy.

PLANT TREES
PROTECT FORESTS
USE FORESTS



This is the only Popular National Magazine devoted to trees and forests and the use of wood.
July, 1923.

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Name-----Occupation-----

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Especially interested in articles on-----

What Are Forests, Parks, and Game Refuges?

[Continued from page 437]

may be used for the purposes for which they were created, without pecuniary profit to private individuals or corporations, aside from reasonable compensation for services rendered.

"The parks should be made as accessible as possible to persons in every walk of life who wish to visit them for what they have to offer of natural beauty and interest; but they should be kept wholly free from extraneous amusement, particularly of the so-called 'jazz' type, which distracts their users from an appreciation of nature's wonders, introduces an atmosphere of vulgarity, and destroys the enjoyment of nature. So, also, to serve the uses of all, some parts of each national park should be accessible only by trail for the benefit of those who wish to get away from the tourist stream of the motor roads and enjoy the charm of solitude and of the open spaces. . . .

STATE PARKS

"State parks should contain features of *outstanding state importance*, or be suitable for development as recreation centers for the use of urban populations. Size appears to be unimportant, aside from administrative considerations. More than two-thirds of the states have, or are about to have, state parks of one kind or another. Some states have also state forests, which serve for recreation. The primary incentive for creating these parks has generally been outdoor recreation, to supply public playgrounds for the congested populations of the cities; often, as in the case of bathing beaches or picnic grounds, scenic features are unimportant. Thus, in its primary incentive, the state park differs radically from the national park. . . .

FORESTS

"The purpose of forests, national and state, is to protect and maintain, in a permanently productive or useful condition, lands unsuited to agriculture, but capable of yielding timber or other general public benefits. Forests not only produce timber and forage, but protect stream-flow, and thus play a very—indeed, a most important—part in irrigation and in water for domestic use and for power, as well as in flood prevention and soil preservation. They contain economic resources, which in the National Forests are very large, but which experience has shown would be quickly dissipated if allowed to fall into the hands of individuals. Among these resources may be counted outdoor recreation.

"All the resources of a forest should be developed to the greatest possible extent consistent with permanent productivity, under the principle of *co-ordinated use*. Thus in utilizing the timber the forest is to be cut in such a way that it will perpetuate itself, sources of water are to be safeguarded, and

cuttings so located as not to injure features of scenic importance. The principle of use of resources is the vital distinction between forests and parks; the former are conserved through wise use, while the use of the latter must be restricted to enjoyment and to scientific and educational purposes. Forests pay for themselves and bring in revenue; parks, though sometimes self-supporting, generally cost money, but yield solid, though intangible, benefits much greater than the cost.

"Public forests serve the additional, and very important, purpose of demonstration areas by showing neighboring private owners how forest lands may be handled so as to yield a permanent income rather than be exploited and abandoned, as so often happens.

MORE NATIONAL FORESTS NEEDED

"The National Forests already contain the bulk of the forested land remaining in the public domain after the agricultural land had been homesteaded and the cream of the forest lands taken up under the timber and stone act. But in various western states there are still some 8,000,000 acres which are unreserved and should now be included in National Forests. . . .

"Since the National Forests contain much beautiful scenery and offer large opportunities for camping, fishing, and hunting, they are incidentally national playgrounds of enormous value. The Forest Service is fully aware of this and is developing this aspect of the forests so successfully that last year they were visited by between six and seven million persons.

STATE FORESTS

"Any land owned by a state and devoted primarily to the production of timber and to the use of its other resources should be administered as a state forest.

"States purchase and set aside lands as state forests in order to conserve the forests through wise use, to derive a revenue, and to set an example in forestry for private owners. The last is particularly important, because state forests comprise only a small percentage of the total forest land, and, though they will doubtless increase, can probably never be depended upon as a main source of timber supply.

"State forests will not be selected for scenic features; but the forest itself is an attraction to all lovers of nature and furnishes shelter for game and other wild life. Hence state forests, though serving an economic purpose, can be used for hunting, fishing, and camping, and therefore play an important part in outdoor recreation. States which own well-administered forests do not need so many state parks as others, so far as recreation is concerned. In such states, parks will be necessary for preserving natural features or historic sites which should

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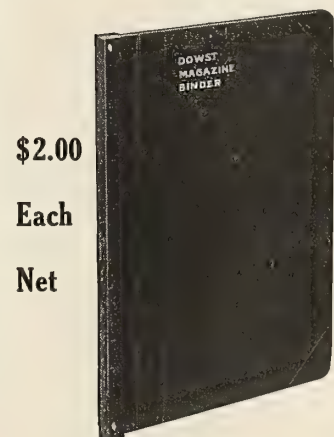
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ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

FORESTER—Experienced graduated forester from large middle-west university. Master of Science degree in forestry. A specialist in tree diseases. At present employed in City Forestry work in city of 140,000 inhabitants, but would like change to a larger city. Have had five years of experience in eastern, middle-west, and southern sections of the country. Would prefer southern California. Address Box 5020, care **AMERICAN FORESTRY**, Washington, D. C. (4-6-23)

GRADUATE FORESTER would like job in Southern Appalachians or Southern Pine Region. Four years in Forest Service. One year in France lumbering with 10th Engineers. One year in state work in fire prevention, where he is now. Has worked from Pennsylvania to Alabama and in Idaho. Some agricultural experience. Address Box 5035, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (5-7-23)

GRADUATE FORESTER with 8 years of experience, both practical and technical, in the United States and Canada. Has had charge of large logging operations, estimated large areas of timberland for both buyer and seller. Open to change of employment. Best of references furnished. Address Box 5040, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (5-7-23)

WANTED—POSITION BY A FORESTER, 12 years' varied experience in northern and southern forests; ex-forest supervisor, at present secretary of forestry association. Especially competent in forest management; practical, commercial forestry; forest protection; publicity and administrative work. Desires employment by large lumber company or state forestry department. Pleasing personality, robust physique and invaluable practical experience. Address Box 5045, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-8-23)

TECHNICAL FORESTER, graduate 1914, with nine years' experience in technical forestry and private logging work, wishes to make a change. At present in Government position of responsibility. Capable of taking charge of logging engineering, forestry, or forest engineering department and making it a success. If you need a forestry man write me, and I will furnish references and complete outline of experience first letter. Address Box 5050, care of **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

FORESTER—Experienced graduate with eight years' practical experience in lumbering and state forestry work desires position, either in state or private work. Address Box 5055, care of **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-23)

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SOLICITOR for reputable Tree Surgery Company, vicinity of New York City. Address Box 5060, care of **AMERICAN FORESTRY**, Washington, D. C. (3-5-23)

EXPERT TREEMEN WANTED—We will require this year a number of experienced treemen and tree surgeons at various points throughout the eastern seaboard. Please write fully your qualifications. Address Box 5030, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

be kept intact for scientific, educational, or other special reasons, and for furnishing breathing spaces for the congested population of cities. . . .

GAME REFUGES

"The purpose of game refuges is the protection and propagation of game and other wild life.

"Game refuges serve as sources from which the surrounding country is stocked with game, and also for the preservation of useful and interesting species which have become unduly reduced in numbers.

"Game refuges are both state and federal; but, as their purposes are more for local than for national benefit, they should be established chiefly by states. . . .

"From the point of view of a sound public land policy, all the remaining unreserved public domain should be handled under the principle of *co-ordinated use*, just as the National Forests are handled. None of it should be alienated except that suited to the raising of farm crops—an insignificant proportion. The rest should be permanently withdrawn from entry and placed under administration, preferably under the Department of Agriculture. . . .



THE EXTINCT DODO

Some persons not versed in natural history, when they hear reference made to the Dodo, imagine it to have been some fabled bird of the far-distant past. As a matter of fact, up to about 250 years ago this curious bird was quite plentiful on the island of Mauritius, near the African coast, its only known habitat. It derives its name from the Portuguese word "*duodo*," meaning "simpleton." The Dodo was twice as large as an average-sized turkey. Its plumage was ash-colored, its bill darkish, and its legs and feet clumsy and yellow. No Dodo was ever known to exist after 1681. What caused its extinction is not

known. As the Dutch navigators who landed on the island of Mauritius in the 16th century called this bird "*Walghvogel*," or "nauseous," because it was not palatable with any kind of cooking, it is not likely that it became extinct because it was eagerly sought as a dainty for the table.

In 1870, when Col. Nicholas Pike was American consul in Mauritius, he presented to the American Museum of Natural History, of New York City, through Mr. J. Carson Brevourt, a number of bones of this extinct bird that had been excavated on the island. From these bones and some others received from the University of Cambridge, England, a complete articulated skeleton has been constructed and is on exhibition in the above museum. The restored specimen shown here is also the property of the museum.

CLOTHING CHINA'S HILLS WITH GREEN

American travelers who have complained of the monotony of the bare hills and plains of north China will be interested to hear that the Province of Shansi now has a Bureau of Forestry, with six branches, and that tree planting on government-owned land is proceeding steadily.

The Shansi Government, according to advices received by the Department of Commerce, is also encouraging private forestation. Every private land-owner is urged to plant at least one tree in every piece of uncultivated ground on his estate. It is said that an average of 100,000,000 trees are being planted annually.

The total acreage of vacant hill land which the government hopes to reforest completely in the course of time is estimated at 30,000,000 acres.

ROME'S WOODWORKING INDUSTRY LANGUISHES

In the city of Rome and its vicinity there are few large woodworking establishments, and these few are reported now by "*Il Ligno*" to be closing up because they find business unprofitable. Just why Rome should be at a disadvantage in this industry it is hard to see, says Trade Commissioner Osborne in a dispatch to the Department of Commerce. Though the city is relatively distant from the timber regions of the Tyrol and Carinthia, which supply cities in the north, it is much nearer to the producing regions of Calabria than are Milan and Genoa. Southern yellow pine from the United States can be landed at either Naples or Genoa and laid down in Rome at no higher cost than in Milan. Furthermore, there is an abundant growth of chestnut in the hills of central Italy not far from Rome.

FORESTRY LEGISLATION IN HAWAII

The legislature of the Territory of Hawaii, which adjourned in May, appropriated a total of \$84,560 to continue the activities of the Division of Forestry of the Board of Agriculture and Forestry during the two-year period beginning July 1, 1923. This is \$16,720 less than was appropriated for the present biennium, and the reduction was necessitated because of reduced territorial revenues.

An additional \$10,000 was appropriated, however, for the extermination of wild goats, which have multiplied to such an extent that they now constitute a serious menace to the forests in parts of the islands.

The reduced appropriation will not permit of the appointment of five additional forest rangers, who are much needed to handle the vast amount of field-work that needs attention in the territory. The forest work will, therefore, be continued on the old basis of seven rangers, who handle the 579,936 acres of government lands in 49 different forest reserves scattered in the mountainous region of the five main islands of the Hawaiian group.

Legislation submitted for the purpose of authorizing the acquisition by exchange of over 14,000 acres of privately owned lands in forest reserves which should be put under proper forest management failed of passage.

MANY FIRES IN PENNSYLVANIA

More than 1,000 forest fires have been reported to the Pennsylvania Department of Forestry this spring. Up to April 24, 700 fires were reported; on April 25, 177; on April 26, 77, and on April 27, 60 were reported. This makes a total of 1,014 fires. Not all of the fires that have occurred in the state have yet been reported. It is estimated that there had been at least 1,200 fires in the state this spring, and that they burned over not less than 100,000 acres.

The largest fire reported was in Hunts Run, Cameron County. It reached a size of 6,000 acres and burned mostly on state-owned land.

Three persons have died from burns received while fighting forest fires in Pennsylvania this spring. This is the largest number of deaths that have occurred in a single fire season since the Pennsylvania Department of Forestry was established.

FOREST SERVICE CREATED IN BRAZIL

A federal forest service is to be created in Brazil, according to a recent announcement, to consist of a special section in the Ministry of Agriculture, Industry and Commerce, to be known as the Brazilian Forest Service (Servico Florestal do Brasil), which shall have for its object the preservation, aid, reconstruction, formation, and improvement of forests. The Minister of Agriculture has already appointed a special commission to draw up organization plans for a federal forest service.

Town Forests in Massachusetts

[Continued from page 424]

children master the technique of planting the little trees. The enthusiasm with which they go about the planting of the trees allotted them is contagious, and a hundred school children will plant an acre in a very few minutes. Laborers dig the holes in advance of the children, and the little hands and nimble backs, working with the spirit of play, plant the trees with great rapidity. Of course, they do not keep up the speed, but in a couple of hours several more acres are started on the job of producing the saw-logs of the future.

The Town or Community Forest is destined to become an important institution in this country. No longer do we find persons who doubt that we are facing a timber shortage, at least in the Eastern States. They may scoff at statistics, but never at the increase in the rent bill. The high cost of lumber today, due in a large measure to the fact that it must be brought farther and farther to the consumer, has increased permanently the rent bill of the people of this country by millions of dollars. There is only one solution to the problem—to grow more trees locally. The timber grown in the town forest is almost equivalent to producing it in the back yard of the ultimate consumer. The enormous charges for transportation and distribution are eliminated, and these items, which represent more than 50 per cent of the cost of lumber to the consumer in the Eastern States today, will go as a subsidy to the community which grows its own timber. National and State Forests are desirable and necessary, but the average community in the Eastern States can go a long way toward meeting its own future timber needs by establishing Town Forests now.

"I have just looked over the April number of AMERICAN FORESTRY and offer you my congratulations on the excellence of the issue."—*George Bird Grinnell.*

"I have now had an opportunity to read the April number of the magazine. I think it is excellent and congratulate you upon it."—*Col. Henry S. Graves.*

"I want to congratulate you upon the excellent appearance of AMERICAN FORESTRY and, what is even more important, the contents. You have done splendid work improving the magazine, and particularly in getting articles of value to foresters. The editorials are of a kind to carry weight and command attention."—*A. B. Recknagel.*

"I enjoy every number of AMERICAN FORESTRY and pass many numbers on to friends to get them interested also."—*Dr. D. L. Tilderquist.*

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"ROADS TO WONDERLAND"

Uncle Sam's Film on Forest Road-making

How the Federal Government, through the agency of the Bureau of Public Roads, is breaking down the barriers which conceal many of nature's scenic treasures is shown in the latest United States Department of Agriculture film release, "Roads to Wonderland."

The new film shows how, through the enterprise and daring of the highway engineers, walls of rock and timber are penetrated to construct avenues of entrance to majestic Mount Hood, in the Oregon National Forest; the incomparable beauties of Crater Lake National Forest; the wonders of indescribable Yosemite, with its Bridal Veil Falls, El Capitan, Mirror Lake, Merced River, and Inspiration Point; the near-by Hetch Hetchy Valley, and other matchless gems of nature's handiwork. The film was produced by the United States Department of Agriculture, the Bureau of Public Roads, and the Forest Service, co-operating with the National Park Service of the Department of the Interior.

"Roads to Wonderland" will be circulated through the department's film distribution system. Prints may be bought by agricultural colleges, schools, and other authorized purchasers at the laboratory cost.

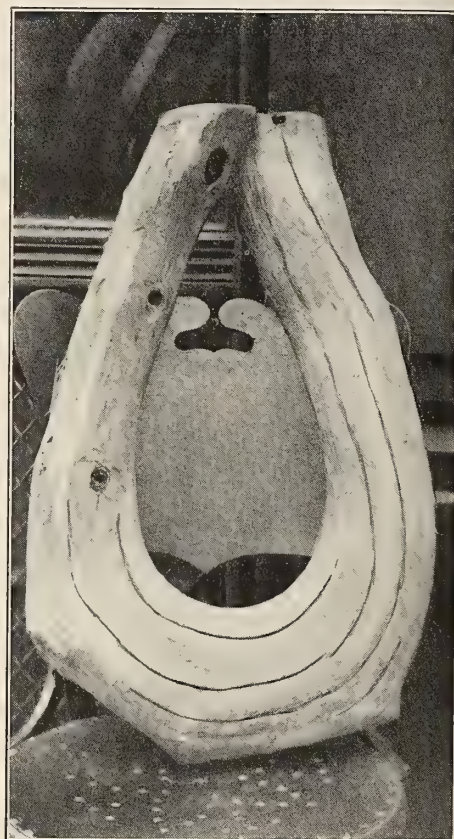
PRESERVING CALIFORNIA'S REDWOODS

Chairman J. D. Grant, of the Save the Redwoods League, has received word that Governor Richardson has approved the Rosenshine bill for preserving groves of California's redwoods and other timber lands, passed by the last session of the state legislature.

Under the provisions of the new law, a survey of all timber lands available for park purposes will be made by the State Forestry Board. This survey will be made in sections and reports will be filed in Sacramento. After the completion of a section of the survey, it will be possible for an individual to give to the state money to be used for acquiring park lands, the tract of redwoods or other timber lands to be designated by the donor.

The State Forestry Board will then endeavor to purchase the tract and, if unable to come to an agreement with the owner, may invoke the right of eminent domain to secure the state's title to the property.

Mr. Grant explains that this law received the support not only of the league and other conservation societies, but also of representatives of the lumber interests of the state.



HORSE-COLLAR GROWS ON A TREE

Sometimes trees grow into odd shapes, but to have a perfect horse-collar grow on a tree is quite a curiosity. This collar came from Nature's own workshop—the woods of northern Michigan, where it had been growing undisturbed for years, until found by the woodsmen. The collar is grown so perfectly that if the proper rings or snaps were placed on it, the collar could easily be used and no doubt would last for years.—*W. F. Hild.*

"I am very much pleased with the appearance of AMERICAN FORESTRY, and Mrs. Beard and my boy Bartlett are delighted with it."—*Daniel C. Beard, National Scout Commissioner, Boy Scouts of America.*

Fly and Spinner

[Continued from page 405]

fish food—such an artificial fly will be valuable.

The technique of angling for trout in our western forests is something to be secured on the ground. No amount of written instruction will suffice. The best way to learn how to catch trout is to catch them. Where fishing is good, I have seen fishermen pick up much of this knowledge in a day. Others never can acquire it, for the little light whip that is necessary to set the hook just when the fish strikes must be as quick as a flash, and some men never can move fast enough to snag a trout that touches the fly in the wink of an eye and must be hooked then or never.

Whether in the North country, where a lusty tug on a heavy tackle signals a catch, or by the laughing mountain streams of the West, where the gleaming rush of the striking trout is as quick as the spring of a splendid sword blade, the signal to the angler is the same. A game fish is on the end of the line fighting for his life. There is a quickening of the pulse that comes only when one is "fishin'."

The Superior Forest beckons the fellow who wants to catch bass, pike, lake trout, or other lake country fish. Trappers Lake and the Gunnison River, in Colorado; Mono Lake, in California, and the streams in the Northwest all are alluring vacation goals for the fly fisherman.

There is an absolute guarantee that you will get something if you go fishing in any of these places. It may be only a lung full of clean air, a rich, red sunburn, or an eyeful of splendid outdoor places; but any of these are worth while, and the odds are that there will be plenty of lively fishing, too.

NEW HANDBOOK ON KILN DRYING

Preventable losses in seasoning lumber total around \$50,000,000 every year, according to a new handbook on kiln drying by the United States Forest Service. It was prepared by Mr. Rolf Thelen, of the Forest Products Laboratory at Madison, Wisconsin.

Fundamental facts about the drying of wood which a kiln owner or operator must know in order to get the most satisfactory results with his kilns are presented in the booklet, together with information concerning different types of kilns, instruments, and apparatus employed in kiln drying.

The handbook contains 24 illustrations and a series of drawings showing types of kilns. The information presented is based on experiments conducted at the Forest Products Laboratory.

Copies of the handbook, which is known as Department Bulletin 1136, may be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 25 cents per copy. Always ask for the handbook by number—Department Bulletin 1136.

In the Name of Development

[Continued from page 343]

vice in connection with woodlots than in the orthodox farm crops, found it dangerous to let their superiors learn of it, and did not know just where to go for sympathy or help.

In the South, the boomers were booming as frantically as in the North, and with even less satisfactory results. Colonization and grazing projects failed with peculiar regularity, and were presently revived in new forms, while 6-inch pine was being bled for turpentine. The agricultural authorities were sound on chufas, carpet-grass, and velvet-beans, but were having much trouble in getting rid of the fever-ticked piney-woods cow, and yet hardly dared tackle the cholera-carrying, pine-destroying razor-back. Save for one lone experiment station worker, they seemed to ignore completely the possible relation between ground fires, good forage plants, milk, and pine. But in Louisiana they had boy's woodlot clubs right alongside the corn, pig, and calf clubs. Ohio had never heard of that; Indiana wouldn't want to.

The headquarters of the "Alluvial Empire" was now faintly demanding whole shiploads of green, land-clearing Germans to help out with the development of the Mississippi delta's marvelous agricultural opportunities and too-fast-accumulating cut-over lands. For some mysterious reason the local corn and cotton niggers were going No'th. Bargains in cut-over land were still available.

Out on the Pacific coast they had a new stump-destroying contrivance, through which, it was hoped, a willing laborer might clear up several acres of raw land a year; but the competition was difficult, for California, with \$90,000,000 worth of irrigation bonds outstanding, was about to put on a great campaign to get settlers to work the lands now irrigated, and so, if possible, get interest on the bonds—or something.

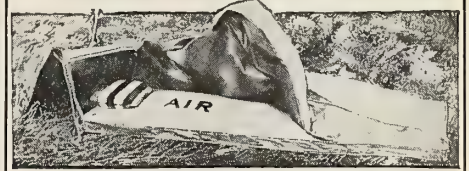
THE DAY OF GET-TOGETHER

No wonder forestry had deadheaded, I thought. Foresters could not be expected to be land economists and publicity engineers as well. But presently, no doubt, the rising prices of forest products would attract real attention. So would those hundreds of millions of acres of idle forest land, with their taxes and carrying charges piling up year after year. By and by the owners of those idle lands and those idle-land communities would probably begin to wonder how they were coming out in their race to unload ahead of confiscation. By and by, perhaps, the pro-farm and pro-forest agencies would get together with some common plan of development. When

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they really canvassed the situation, perhaps they would discover that with the maximum of agricultural development reasonable to anticipate, and with the maximum of intensive forest development reasonable to anticipate, and both working together in harmony and good-will, the end of this generation will still see us with enormous areas of idle land, good raw farm land, still available and a very trying shortage in forest products.

HOW the small landowner may make his woodland a source of profit as well as a thing of beauty.

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Forest People

[Continued from page 399]

acquired 2,000 acres and more. Then he began planting trees. He bought them by carload lots from the Conservation Commission, and paid for them and for the labor that planted them.

There are interesting close-ups of the Luther activities. The Luther woodlot is now one of the tenets in the forestry ritual of New York State, calling the thinking attention of new pilgrims to the message of the sands. In 1901 Mr. Luther purchased some sixty-five acres of scantily timbered land, and at once recovered the dollars invested in the purchase price by the simple process of cutting off enough telephone poles to total this amount. The land paid for itself again five years later in ties, in cordwood from defective trees, and by sacrificing some few mature trees. Young growing trees were allowed to remain. In 1914 the same procedure was followed, and the land paid for itself the third time. Yearly thereafter Mr. Luther has cut cordwood in small amounts, and now, in 1923, he is again able to cut from 75 to 100 cords of wood and 25,000 feet of good oak and pine, still leaving young growth coming up for future cutting under the remaining bigger hardwood trees.

In 1915 Mr. Luther planted 107 acres with white pine. From that time on he has planted nearly 400,000 trees, including white

pine, Scotch pine, red pine, and some hardwood. The trees run about 1,000 to an acre, which gives him a little caravan of trees in 400 desert tracts. Present stumpage prices range from \$10 to \$15 a thousand feet, and experts say Mr. Luther's pine is growing about 500 board feet per acre per year. The whole forest preserve has been laid out and maintained on a commercial basis. It is the work of a hard-headed business man, from a commercial standpoint. Mr. Luther runs his own sawmill; his market is right at hand. Every bit of the wood can be sold at Mechanicsville, six miles distant, to the brick yards, and all the pulpwood goes to the pulpwood companies at the same place. He has this year's planting program laid out to plant 75,000 white pine and 25,000 Scotch pine. Next year he plans to plant 500,000 red pine.

Between forests, Mr. Luther runs the White Sulphur Springs Hotel. He says his motto has been

"One ship sails east and the other sails west

By the selfsame wind that blows.

It's the set of the sail and not the gale

That tells them which way to go."

And so Tommy Luther steers a pine-masted desert ship and keeps his weather eye cocked for sand-storms, with little time for the spread sails of sea-going craft.

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In an authoritative magazine we read:

"A certain house eight years ago did an annual business of \$3,000,000 and the cost of selling the goods amounted to 8 per cent. Good advertising has since then increased their annual business to \$15,000,000 and the cost of selling, including advertising expenditures, has fallen to 5 per cent. The salesmen are earning much more money, and the advertising has enabled them to do it, because while their commissions are smaller their sales are made easier and are more than trebled in volume."

Who paid for the advertising?

Not the consumer, for the price of the goods was less than it had been without advertising.

Not the manufacturer, because his total selling cost was 3 per cent less.

Not the salesmen, because they made more money.

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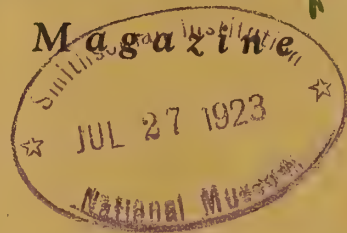
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VOLUME 29

August, 1923

NUMBER 356



Trees

Farm and Forest

Wild Game and the Pioneer

Snow Gums

The Ranger's Wife

Wood in Ancient Egypt

Good Shooting for All

Kew Gardens

The American Forestry Association

Washington, D. C.

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNAL FORESTS.

FOREST RECREATION as a growing need in the

social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

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AUGUST, 1923

No. 356

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AMERICAN FORESTRY

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AUGUST, 1923

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Trees

BY ZANE GREY

AN English philosopher said that one of the most tragic spectacles of the historic present was the blind and indifferent rush of Americans toward ruin. Money, luxury, excitement, speed—these it would seem are the goals worshiped by the majority of the people of the United States. Our great free wonderful America has been caught in the maw of materialism.

One of the melancholy things to contemplate is the ruin of our forests. The tabernacles of the stately trees! All true

not be considered. The terrible fact is that the life and soul of the nation are in peril.

Can any nation progress without beauty, religion, wisdom? These are as essential to greatness as bread. Beauty is an integral part of nature, and in case of the forests it can be utterly destroyed. Religion is a need that arises out of our lonely past of hundreds of thousands of years, when man roamed the

timbered earth. He had to have something besides food, woman, child. He had to perpetuate



Americans love trees. How could they help it? The woods is an inheritance. But they do not think.

Most of the people flock to the cities. And meanwhile the havoc is wrought on all sides.

That lumber is a necessity no sensible person can dispute. But that the forests should be destroyed by commercialism is a vastly different matter. The sentiments of dreamers, artists, lovers of nature, can be left out of the reckoning. These are the first to see the handwriting on the wall, but their personal grievance and sorrow need

himself, and that meant faith.

The ministry of trees, of stars, of sun and moon, of natural things,

developed in him a belief in a power of infinite life, and that was his soul. Wisdom, the same as beauty and religion, came from long contemplation of the visible things of the universe.

Trees are as important as wheat fields. Houses should be made of brick, stone, cement. It would be better that we return to mud huts like the troglodyte than lose our souls. All of life cannot be measured in dollars.

Life is brief, and only the achievements and accumulations of spirit can be taken into the beyond.

Men who had done good with the talents entrusted to them have always been of a serious bent, whether intellectual giants or plain simple-minded workers. And all have been lovers of nature.

Surely it can be proved that Christ loved the earth, the waters, and the living inhabitants thereof. Abraham watched the stars that shone on the lonely Arabian desert. Shakespeare saw beauty as well as character. Tennyson's poetry is flooded with the light, the dream, the glory of

stately Hudson and the broad Ohio, the beautiful Connecticut and the winding moss-shaded Caloosahatchie, the majestic Mississippi and the muddy Missouri, the thundering Colorado and the grand Columbia. When the forests are gone what will become of these rivers? For the forests draw and store the waters of the heavens. What will become of the cold, clear, murmuring and babbling brooks, and the sweet, pure, fountain springs from which they flow?

It is only necessary to see the devastation caused by the pulp-mills in the East and the sawmills in the West to



nature. Tagore perfected his wonderful philosophy in the forests of India. As a boy and as a man Abraham Lincoln found something in the solitude of the woods—under the maples, hickory, sycamores, elms, chestnuts. Roosevelt reserved our National Forests.

The trees, then, of our native land have a profound significance and importance. Every boy and every girl ought to know that, even if all cannot play and study under the rustling leaves. In every yard in every home over all this great broad country there is a tree of some kind. Why? If it did not grow there naturally some one planted it.

Our great rivers have their sources in the forests—the

realize that these sweet waters are perishing from the earth.

A few years ago Pike County, Pennsylvania, had thousands of square miles of forest—white pine, hemlock, hickory, oak. They are gone. And the cold springs are gone, the brooks have dried up, the amber moss is dead, the trailing-arbutus no more lends its exquisite fragrance to the air, and the gentian is only a memory. Where have these forests gone? To make mine-props in the coal mines! Beauty, glory, health, joy, and the deeper benefits of the forests, gone at six dollars a thousand feet into propping the shafts of dark and sordid tunnels! The government let these trees go, the people let

[Continued on page 463]



The Farm and the Forest

BY HENRY S. GRAVES

FORESTS mean more to the farmer than to any other individual in the United States. He is the first person to suffer if lumber is not available at reasonable prices. The burden falls chiefly on the farmer when the local forests are stripped off, the wood manufacturing industries move away, and a large part of the land is impoverished and idle. As an owner of forests, the farmer suffers from the lack of fire protection, both because of the direct injury to his woodland and because the hazard of fires depreciates the value of his whole property. In the irrigation regions of the West, the very existence of agriculture depends upon the water resources that in large part have their source in the wooded hills and mountains.

Cheap lumber has been a large factor in building up our agriculture. High prices of lumber act as a check to new building and to needed repairs, retard new development and improvements, and cause difficulties to agriculture in countless ways. Ninety-eight per cent of

the farm buildings of the country are constructed of wood. The farmer must have lumber for boxes, crates, baskets, and barrels to ship his products. He uses lumber in fencing, in construction of bridges, dams, and feeding troughs, for water development, sanitation, and a multitude of other purposes. Wood enters into the construction of most of his implements—harvesters, wagons and other vehicles, dairy equipment, and tools; and his requirements for round wood, in the form of poles, posts, cribbing, corduroy, and fuel, are equivalent to over 65 per cent of all the unsawn material used in the country.

It will not do to say that the farmer can use concrete, brick, tile, and stone just as well as wood for his buildings. In spite of the increased cost of lumber that is now pinching the farmer, the cost of substitute material is considerably higher. The farms of the country, generally speaking, are underbuilt. By this I mean that on thousands of farms the buildings are inadequate. This applies to the dwellings and to the barns and shelters for



A FARM PLANTATION WHERE PLANTING PAID

This plantation in New Hampshire was established in 1873 and in 1912 a block of three acres of white pine was sold for \$1,000.

stock, for produce, and for equipment. Go about the country and see how few new farm buildings are being constructed. An expression of this is the fact that in 1920 the construction of new buildings on farms averaged about 50 per cent below normal and repairs were fully 30 per cent below normal.

The farmers will not be able to obtain cheap lumber if they have to rely on material transported from a great distance. They need to have timber, and particularly softwood timber, comparatively near at hand. It is the tremendous transportation cost that is making lumber so high. There was a time when the farmers of the Middle West obtained their supplies chiefly from the great forests of the Lake States, and then from the pineries of the South. Now more and more the people of the whole eastern half of the country have to bring in the bulk of their construction lumber from the remaining fringe of pine in the far South or the still more distant forests of the Pacific States. Every mile that the forest supplies recede adds to

the cost of lumber to the farmer. Already over 600 million feet of lumber from the west coast are marketed in the northeastern district. This means a cost for transportation of \$20 to \$25 on every thousand feet. Such a burden puts lumber, in the amounts really needed, beyond the reach of many farmers.

FARM WOODLANDS A MIGHTY FACTOR

The answer is that more timber should be produced near at hand and there should be forests well distributed wherever there is suitable land that is not required for crops and improved pasture. In this producing of local timber the farmer is going to play an important and often the principal part. In the regions where forests grow naturally most farmers have their woodlots. These generally average from 20 to 50 acres. A great many farmers own additional tracts of forest land, often up to a thousand acres or more. In many states the bulk of the forest land will be in the form of relatively small

tracts owned by farmers or intermingled among farms; but the aggregate acreage will be very large and the total output of products will be of great importance if the forests are handled properly.

The farmers of the country today own over 165 million acres of land classed as forest. A single woodlot of 30 acres seems a small affair and calculated to have small importance in the nation; but consider the aggregate of all the farm woodlands and we have a resource of enormous importance. It will be the farm woodlands that in the long run will furnish a large part of the wood products used locally. The protection of the farm woodlands and their proper care constitute a national problem

of the greatest urgency. It cannot be allowed to drift with the small attention of the public and of the agricultural leaders that is the case today.

At the present time the growth of good material on private woodlands all over the country is far less than what it could be if wholly practical measures of intelligent care were used. This

applies both to the large lumber holdings and to the farm woodlands. The latest studies of the Forest Service indicate that we are using up or destroying the softwood timber of the country eight and a half times as fast as we are growing it, and the hardwood timber is going at a rate of from four and a half times as fast as new production by growth.

It is common to speak of the Northeast as exhausted of its timber. In point of fact, New England has over two-thirds of its land in forest. Even in Connecticut, which is the fourth most densely populated state in the Union, over 45 per cent of the land is classed as forest. There is enough forest land on the farms or intermingled with the farms to supply the bulk of the local requirements, if the woods were properly cared for.

In the agricultural districts of the East the old timber is gone. Forest fires, neglect and poor handling of the woodlands, the custom of stripping whole tracts at one cutting, and the disappearance of local wood-using plants



AN ABANDONED HOME IN NEW ENGLAND

The shift of agriculture to the West was partly responsible for the abandonment of farms in the Northeast. A contributing factor in recent years has been the exhaustion of the supplies of timber and the disappearance of the wood-using industries.

have all contributed to impairing the productiveness of the woodlands and lessening their economic service to the owners and to local consumers. An examination of the woodlands reveals that the growth is low; that the quality is inferior, because many of the trees are poorly formed or defective, or both, and there are in the aggregate immense areas producing very little or nothing of present or future value. There is an abundance of land in forest, but this has been so abused that it is rendering relatively a poor service.

This condition can be changed and the woodlands in the farm regions can be made not only a great asset to the owners, but an important element in building up the communities. The farmer is in a better position to practice forestry than almost any other owner. The woodland is an essential part of the farm. It represents an opportunity for usefulness and money return, if properly handled. Ordinarily, it can be more easily protected than very large tracts. The owner is right at hand to give it personal supervision. The requirements of the farm provide a use for many varied products that make it worth while to make improvement thinnings in the woods, and in many sections there are developed markets that bring good returns for woodlot products.

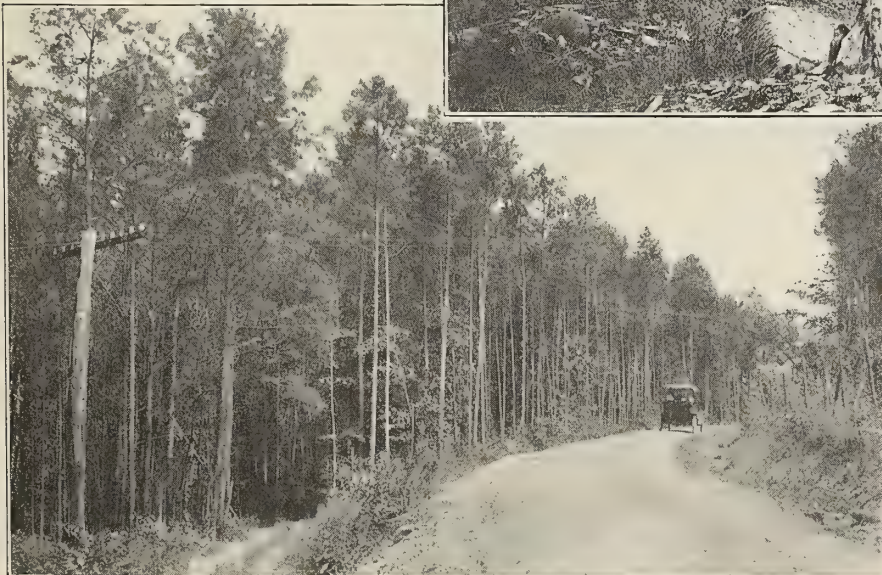
What can be accomplished by farmers has been repeatedly demonstrated. Every farm woodlot in the East should be producing at least a cord an acre of growth each year, and over half of this should be in the form of timber, as distinguished from cordwood. Good pine forests are capable of growing as high as 1,000 board feet a year on a single acre.

Most people think of forestry as something for future generations. This comes from the common no-

tion that forestry begins after a forest has been destroyed, and that it consists of the painful process of restoration and waiting a generation or two for any returns. Forestry is a problem of land administration. It involves the business handling of woodland properties, their protection, and the utilization of their products, as well as the growing of timber. Naturally, if a farmer has demolished his forest or let it run down to a waste, reconstruction is essential; but even then protection and care of the woodlot will cause a steady increase of value that will affect the value and desirability of his whole farm property. In many sections the removal of the fire hazard and an effort on the part of the farmers to practice forestry would in a short time double woodland values. The returns to the owner, therefore, are not long deferred.

FOREST FAILURES A HEAVY BLOW TO FARMERS

A forest can be of service only as it is used. Without a market for the products of the woodlot, the farmer is in the same position as when he cannot dispose of his crops. Forest industries are as essential as the forests themselves. Forests, the forest industries, and markets



WHICH COUNTRY WILL ATTRACT SETTLERS AND COMMUNITIES?

are three essential links of an economic chain. Destroy the forests and the industries disappear and the market and consumers are not served. Let the wood-using industries disappear, as has happened in parts of New England, and the restored forests yield small returns. And it is this very disappearance of the forest industries that strikes a blow at the farmer as severe as the rising price of lumber imported from other states. In regions where there is a great deal of non-agricultural land intermingled with the good land, the in-

dustrial and community development depends in part on other resources than agriculture. The forest and the forest industries react to strengthen and build up agriculture itself. The communities about the industries furnish markets for farm products, the plants call for raw material from the woodlots, there is an opportunity for work for men and teams during off-seasons, and there are tax returns from the industries to aid in the building of roads, support of schools, churches, and other public enterprises that could not be carried by the farmers alone.

In the older sections like the Northeast, the forest was an important factor in keeping up the agriculture in the hill country long after the competition of the West caused a decline in production of cereal crops and live stock. The hundreds of local wood-using industries furnished a market for the products of the woodlots and an opportunity for work for men and teams in winter. The progressive cutting off of the timber has caused a steady decline in these local industries and an added impulse to abandonment of farms. In the repioneering of these abandoned farm lands, the building up of the forests and of the local wood-using industries will be an important and essential feature. Where there has been extensive forest devastation, as in portions of the Lake States and the South, agricultural settlement has been set back many years. In such places forestry and agriculture must go hand in hand.

Wherever there is a constant danger from fire, the value of the woodlands is depreciated. Remove the fire hazard and the farmer will have an incentive to look after his woods, to plant his waste lands with trees, to cut carefully, so as to get a good new growth, to improve his growing timber by intelligent thinnings, and the like. His woods will have a higher value, because it is a safe form of investment and he has put value into them.

But a farmer has difficulty in safeguarding his property if his neighbor is careless. It has been demonstrated over and over again that we can safeguard our forests

from fire only through joint action that brings into common play the efforts of every owner of forest land. Obviously, such a plan of organized protection can be developed and successfully carried out only by the state itself.

FARMER NEEDS HELP IN FORESTRY

The state builds a system of lookout towers and roads and trails or other devices to make possible fire protection. The state asks owners to conform to certain provisions in regard to the use of fire on their lands, or disposing of dangerous debris, or co-operation in a patrol service, or in putting out fires that may be started. Each owner does his part and fires may be prevented. The

difficulty so far has been that the states have not provided enough funds to enable the state officers to construct the basic improvements for prevention, or to organize the owners effectively, or to educate careless people who smoke cigarettes in the woods or do not know how to handle a camp-fire.

As soon as a farmer tries to improve his woodland and invests time

and money in the work, he realizes that he is paying every year a tax on the growing timber, and as the trees grow older his taxes go up. If he figures out what this means, nine times out of ten he will say, "It is an impossible system. The taxes will eat up my profits. I can't pay every year on a growing crop. I ought not to pay taxes on the crop until it is harvested." And he would be right. Here is a second obstacle to forestry that must be removed. Just as in the problem of fire, the farmers can get the system of taxation changed if they want to, and as soon as they realize how the present plan works against their own interest they will unite and demand the legislation required to make feasible a better handling of woodlands.

GREATER HELP NEEDED FROM AGRICULTURAL AGENCIES

Forestry has not been given sufficient consideration as a part of farm management. The public has recognized



FARM BOYS MAKING RAILROAD TIES

At slack periods the farm work is transferred to the woods. A farmer is fortunate to have a well-stocked woodlot. If properly handled, it yields a steady return, for a forest reaches its highest service through use.

the need of research, experiment, practical demonstration, and education in the methods of crop production. A great organization has been built up to aid the farmer. Agricultural schools and colleges are supported by public funds, experiment stations investigate the local problems of farming, and public agents co-operate directly with farmers in applying the principles of modern agriculture. The same process is necessary in farm forestry. The agricultural colleges and experiment stations should undertake far more than at present in forest research and experiment and in co-operating with individual farmers in forestry practice.

The stake in forestry as a part of agriculture is tremendous. Ample public funds should be provided to enable the agricultural agencies to take an aggressive leadership in helping the farmers handle their woodlands as well as their fields and pastures.

I have already said enough to show how vitally our agriculture and the farmers are affected by the national forestry situation. Only a part of the problem can be solved by the farmers through the better handling of their

own woodlands. The building up of national and state forests, the protection and right handling of the remaining great timber tracts in private ownership, the development of better methods of forestry, the discovery of new uses of woods and ways to use wood more economically, the assistance of the public in rehabilitating devastated lands that are now idle wastes, etc., are all matters that are involved in the national problem of forestry, and every farmer is vitally concerned in its right solution. In their own interest, they should support any measures that will stop the present depletive processes and should aid in continuing and rebuilding the forests of the nation. As a consumer of forest products, as a forest owner, operator, and a producer of timber and wood, and as a woodlot forester, the farmer is an important figure in a national scheme of forestry. That he will meet his obligations and opportunities in these matters there can be no doubt, as soon as he really understands what forestry has to offer to him and his interests, and what it means in advancing the welfare of the people of our country.



A FARM PRODUCT—THE WOOD THAT LIGHTS OUR FIREPLACES

This is a woodyard in Washington, D. C., filled to overflowing with the product of farm woodlots. We draw most of our fuel wood from the farm. In 1918 the fuel wood crop of the country was worth \$487,000,000.

The Toll We Pay

FIRE in the woods continues to exact a frightful toll. Like a grim gatekeeper at the bridgehead, it yearly reaps its red harvest. During the year 1922 eleven and one-half million acres in continental United States was fire-swept with a flame damage of almost seventeen million dollars, according to figures just compiled by the United States Forest Service. This was not an exceptional year, for the yearly averages for the period from 1916 to 1922 closely approximate the 1922 figures.

The toll taken by forest fires should be blazoned throughout the country. It should arouse the nation to greater efforts. AMERICAN FORESTRY therefore prints below a summary of the figures compiled by the Forest Service, showing the forest fire octopus in cold, graphic figures. The figures given under "damage done by forest fires," do not take into account the vast amount

of intangible and indirect damage resulting from forest fires, such as that through decay of damaged timber, replacement of desirable species of trees by less desirable ones, soil deterioration and erosion, loss of wild life, checked stream flow, interrupted tourist traffic, and the like. In this table the destruction in the southern states stands out like a flaming brand in the night. In 1922 one-third of the total damage done by forest fires was in the southern states. During the seven-year period one-quarter of the yearly fire loss was suffered by the southern states. The time has come for the nation to awaken to its staggering fire losses and to put its heel on fire in the woods. Fire and forests do not mix. We cannot have both. We must choose between them—and choose quickly.

Region.	Number of fires.		Damage resulting.		Area burned—acres.	
	During year 1922.	Average for 7 years, 1916-1922.	During year 1922.	Average for 7 years, 1916-1922.	During year 1922.	Average for 7 years, 1916-1922.
United States (Alaska excluded).....	51,891	36,112	\$16,678,485	\$16,463,241	11,541,977	10,954,137
Northeastern states	8,054	5,201	1,865,659	782,833	402,323	192,741
Appalachian states	5,749	3,446	1,534,825	1,290,185	766,491	534,848
Southeastern states	15,935	11,259	5,727,469	4,793,182	5,853,418	4,725,251
East Mississippi states.....	1,467	1,471	467,890	471,979	233,304	314,984
West Mississippi states.....	9,337	4,954	1,956,707	1,501,406	2,175,120	3,150,577
Lake states	2,019	1,546	1,199,459	4,863,906	583,394	695,466
Prairie states	36	83	121	5,674	1,695	6,881
Rocky Mountain states.....	3,565	3,219	844,804	1,060,996	212,468	401,518
Pacific states	5,729	4,933	3,081,551	1,693,080	1,313,764	931,871

The Funeral of the Trees

FREDERICK S. BAKER

Across the sage the crimson glory flamed,
The Great Salt Lake lay molten, far below,
While westward rank on rank the mist-blue hills
Stood clear in peaceful haze against the glow.

That glow! It swept in floods from distant hills,
Across the western sky a blaze of light,
And stole away above the sunlit clouds,
To mingle with the smoky shades of night.

There 'rose a mighty cry through forests green,
A scorching breath came sweeping on before
As rushing up the mountain's verdant slope
Came flame and smoke and wicked crackling roar.

A thick and acrid billowing yellow smoke
Came boiling from the caldron of the fire
All shot with lurid licking tongues of flame
That ever leaped and fell to leap the higher.

Beyond this scene I saw a stricken wood
Of black and smould'ring torn and branchless spires
With naked rock and smoking barren earth,
The heritage of raging forest fires.

The scene was gone—again the hills stood round,
And o'er the pungent sage stole sunset's glow
The air again was blue with hazy mist,
The Great Salt Lake lay molten far below.

I mused. How man doth make a wilderness,
And scatters black destruction through the wood!
But He who plants the forest trees looks down
And sees the smould'ring mountains where they stood.

He sees their blackened, maimed, and tortured forms,
Their corpses lying naked 'neath the sun,
Their bier of black and noisome, barren earth.
Is this the end their blameless lives have won?

Not so! Their Maker wills a tribute grand.
He takes the thick dark smoke that bellows high
And weaves a hazy pall of cool blue pearl
To spread across the mountains where they lie.

Its choking bitterness is washed away
It floats a fragrant incense o'er the scene
And spreads away upon the wings of wind
To cover forests far away and green.

The flames He takes with hands omnipotent,
And twists them into Heaven's roses bright
To fling above the dead and murdered trees
Before He digs the deep dark grave of night.

Oh Man—when e'er thou see'st the summer sun
Sink down in crimson glory in the west,
While smoky haze envelops all the land,
In misty purple all the hills are dressed—

Remember, that thou, looking, see's there
The fun'ral rites for tall and splendid trees
That grew upon the distant mountain slope
And swayed and whispered in the summer breeze.

Pray not for them, they need no word from thee,
See on thy brother's brow the brand of Cain.
So pray to save his thoughtless vandal soul,
And work to grow God's forest trees again.



Wild Game and the American Pioneer

BY DR. WILLIAM T. HORNADAY

Director of the New York Zoölogical Park

THIS is now a nation of 110,000,000 people, and I fear that only 100 out of the entire lot even occasionally indulges in a good, long think about the part played by wild game in the founding of this great nation. Of course, we judge these matters by what we read and hear.

Several times over I have proposed a historic monument to commemorate the services of the white-tailed deer, and others for the bison, the elk, and the wild turkey; but no one heeds it. We think that as a people we are not ungrateful; but let us pause a moment and consider where we stand toward the game of the past.

Throughout a long and hungry century, extending from Plymouth Rock to Pittsburgh, the white-tailed or "Virginia" deer was the mainstay of the American pioneer. The first fresh meat of the Pilgrim fathers and mothers was venison, brought to them by the friendly Indians. Last year (1922) in the State of Pennsylvania 6,115 deer were killed and eaten, of a total weight estimated at 794,951 pounds, worth, at 30 cents per pound, \$238,485. The wisdom and the success of Pennsylvania in conserving and utilizing her deer is wonderful, and to her my hat is off!

The range of the white-tailed deer, even in the confines of the United States, is enormous. Originally it covered the whole country, from the Atlantic coast, Maine, and Florida to the foothills of the Rocky Mountains. Wherever timber grew, there this deer species was found in

abundance. To my mind it needs no figures, nor any great thought effort, to imagine fairly the enormous value of this animal to the hardy but hungry pioneers, who constantly went beyond the domestic meat supply of "the colonies" to wrest new territory from the Indians and open it up to settlement.

With the buckskin man and the "early settler," both in the primeval forest and on the prairie, it was at first a case of wild meat or none. The long-barreled, small-bore "squirrel" rifle, with its powder-horn, patched bullet, and flint-lock action, was the great meat-producer of the pioneer, and his one best bet was on the white-tailed deer. After the cabin had been built and a clearing made for corn, came next the beginnings of herds of cattle and hogs. In the backwoods there was occasionally a fight to preserve the pigs from the bears and pumas and promote the survival of the fittest producer of bacon.

To the buckskin man the rifle came first, the ax next, and afterward the wagon and the plow. The rifle was the first food-getter. For two centuries and more of nation-building the deer, the bison, and the elk were very important food factors. It was away back in 1620 that Col. William Byrd, while surveying the southern boundary of Virginia, only 155 miles from the Atlantic coast, found buffaloes to kill and eat; and many a buffalo was killed and eaten by the early Virginia colonists. In Louisiana, M. Penicaut (1698) found buffaloes on the shore of the Gulf, at Bay St. Louis, and "filled our boats



THE INTERIOR OF MAX SIEBER'S CABIN

Neat and clean as a typical New England kitchen, this frontiersman's home was a credit to the fraternity.

with the meat of deer, buffaloes, and other wild game, which we killed" and took to Biloxi.

Skiping northward, we are told that there were thousands of buffaloes in Kentucky and Pennsylvania. In Ohio, La Houtan said (1687) that, besides "beeves," "I cannot express what quantities of deer and turkeys are to be found in these woods, and in the vast meads that lie upon the south side of the lake" (Erie). Mr. L. D. Watkins, of Fair View Farm, Manchester, Michigan, has established the fact that large numbers of buffaloes once visited the small prairies of southern Michigan. In Illinois the bison lived in thousands; and so on westward to the Great Plains.

The story of the bison millions of the great plains and the part they played in sustaining overland travel, and even in the building of the Union Pacific Railroad, is well known. Col. W. F. Cody became "Buffalo Bill" because of the buffaloes that he killed for the tin plates of the railway builders. Even despite the wicked wastefulness of the fourteen years of systematic slaughter that exter-

minated the bison as a source of food for plainsmen, the dying millions added millions of dollars to the wealth of the nation. Had they been killed with a decent regard for meat conservation, they would have yielded at least four times what was realized on the hides—the only product taken save their bleached bones!

In the Rocky Mountains and the Coast ranges of the Pacific States, the mule deer and the true black-tail of the Pacific Coast forests have yielded to the human flotsam and jetsam of that vast area *millions* of dollars' worth of good, succulent meat. And how is it in Alaska?

There are great areas in Alaska whereon the flesh of the moose and caribou constitutes the *only* fresh meat supply! This is because of the enormous difficulties of overland transportation. There are thousands of pioneer miners in remote regions

who can procure no fresh meat save moose or caribou and fish from the large streams. When all the moose and caribou are gone, many areas will be found uninhabitable. The river Indians, who throughout all their generations have lived upon salmon, now are losing their salmon supply to the canning industry, and sheer hunger has been forcing them to take to the interior mountains



THREE BUCKSKIN MEN AT THE HOME OF A PIONEER GAME HUNTER

Taken twenty years ago, the picture shows L. A. Huffman, Max Sieber, and W. T. Hornaday at Max's picturesque cabin, in the Hell Creek Bad Lands, Montana. Just below the front door is seen the entrance to the dog's quarters, better known as the dog's "ranch house!"

to subsist upon game. The effect of this on the game needs no description. It means total extinction.

And yet, because certain "eastern naturalists" are endeavoring to have Congress enact a new law that will tend to save the most valuable game of Alaska on a continuing basis, for the benefit of the people of Alaska, we have been railed at and insulted as never before. The last answer to our effort is: "300 *female* moose have been killed, contrary to law, on the Kenai Peninsula, and the Kenai game warden made no effort to prevent the slaughter."

A fine volume might be written, *and should be written*, on the value of the wild game of the past to the American nation. Monuments should be erected to the deer, bison, elk, antelope, sheep, quail, turkey, prairie chickens, and wild ducks and geese, to commemorate their services as nation-builders and wealth-producers. If their value up to date could be figured out, think you that it would fall one penny short of \$100,000,000?

The protection of our migratory game is in fairly

good shape, save that the bag limits are 50 per cent too high and the open seasons twice too long. The protection of our non-migratory game, which *must* live by state protection or die, is generally in a bad way. I have already expressed my anxieties and fears regarding it, and the sportsmen will not wake up. Is it, then, any cause for wonder that we believe in sanctuaries, *millions of them*, as so many last refuges of the harried and hunted wild life?

No. The sanctuary is the logical conclusion of our situation today. It is the one "best bet" of the nation, state, and the private individual. It is the great "self-expression" of the boy and girl, the woman and the man who cannot personally bring about the passage of a new law or the appointment of another game warden. And when you do make a sanctuary, *see to it that it is made continuous!* Thus shall you acquire merit and the feeling within that you have done your level best to give the wild life around you a square deal.



A TREE WITHIN A TREE

H. E. Zimmerman

A FORTY-FOOT high eucalyptus tree, with a perfectly preserved smaller tree inside, was cut some time ago by a resident of Los Angeles, California. The trunk, boughs, and limbs of the inner tree were completely covered by the new outer tree. No one seems able to explain this unusual growth, as scientific men have not seen anything like it before. It may be one of those freak conditions which are inexplicable except on the theory of the protoplasmic cell and a misimplantation of some of its constructive effort—similar to what is known as a dermatoid cyst in a human being, according to Dr. George P. Clements, of Los Angeles.

The gentleman who cut the tree says that about three feet from the ground he noticed a circular cavity, through which could be seen the bark and balsam, both of which "seemed to be pressed out." The covering of the inner tree is exactly like the bark of an ordinary tree. The larger section in the picture is a "slant" cut from the tree, showing the coloration, texture, and clearly defined bark. The other smaller sections show the inner and outer growths from various parts of the tree. These sections were on exhibition at the Los Angeles Chamber of Commerce and afterward removed to Exposition Park, presumably for permanent exhibition.

Pan American Building Boasts Historic Washington Trees

By HENRY L. SWEINHART

WASHINGTON, the capital of the nation, is noted for the thousands of beautiful trees which line its well-shaded avenues and grace its numerous parks. A few trees more or less, it might be argued, would make no difference.

That was not the way, however, in which the officials in charge argued when they laid out the plans for the handsome marble Pan American Union Building, which stands a few blocks south of the White House and adjacent to Continental Memorial Hall, national home of the Daughters of the American Revolution, and to the national headquarters of the American Red Cross.

The Pan American Union Building, which houses the international organization composed of the United States and the twenty other republics of North and South America, and which attracts practically all of the thousands of visitors who come to Washington annually, was erected about fifteen years ago, on the site of the famous old Van Ness Mansion, which had been one of the historic spots and one of the show-places of the capital.

This stately old mansion, rich in memories of the early days of Washington, was surrounded by magnificent trees—venerable and elegant citizens, who had witnessed

the nation's capital grow from a small group of buildings to the wonderful city it is today. When the house, with its high surrounding brick wall, was razed to make way for the handsome modern edifice, the question arose as to whether the trees which had sheltered it should also be sacrificed. The decision was in favor of the trees.

It was necessary to cut down some of them, but a considerable number were preserved to serve as a setting for what is considered by architects and laymen alike the most handsome office building in Washington.

These trees stand also as a living example to builders of the value of preserving and utilizing, in their architectural and landscape designing, old and well-formed trees. It would have taken new trees many years to have reached anything like the growth and beauty of the old Van Ness sycamores.

Without them the Pan American Building

would have been a structure of icy marble beauty; but the trees in front of it give the added touch needed as a foil for its richness of architectural splendor.

The old Van Ness Mansion was long a center of attraction in Washington. It was the home of John P. Van Ness, a member of Congress from New York, who in 1802 was married to the beautiful, witty, and winsome Marcia Burnes, daughter of David Burnes, whom Wash-

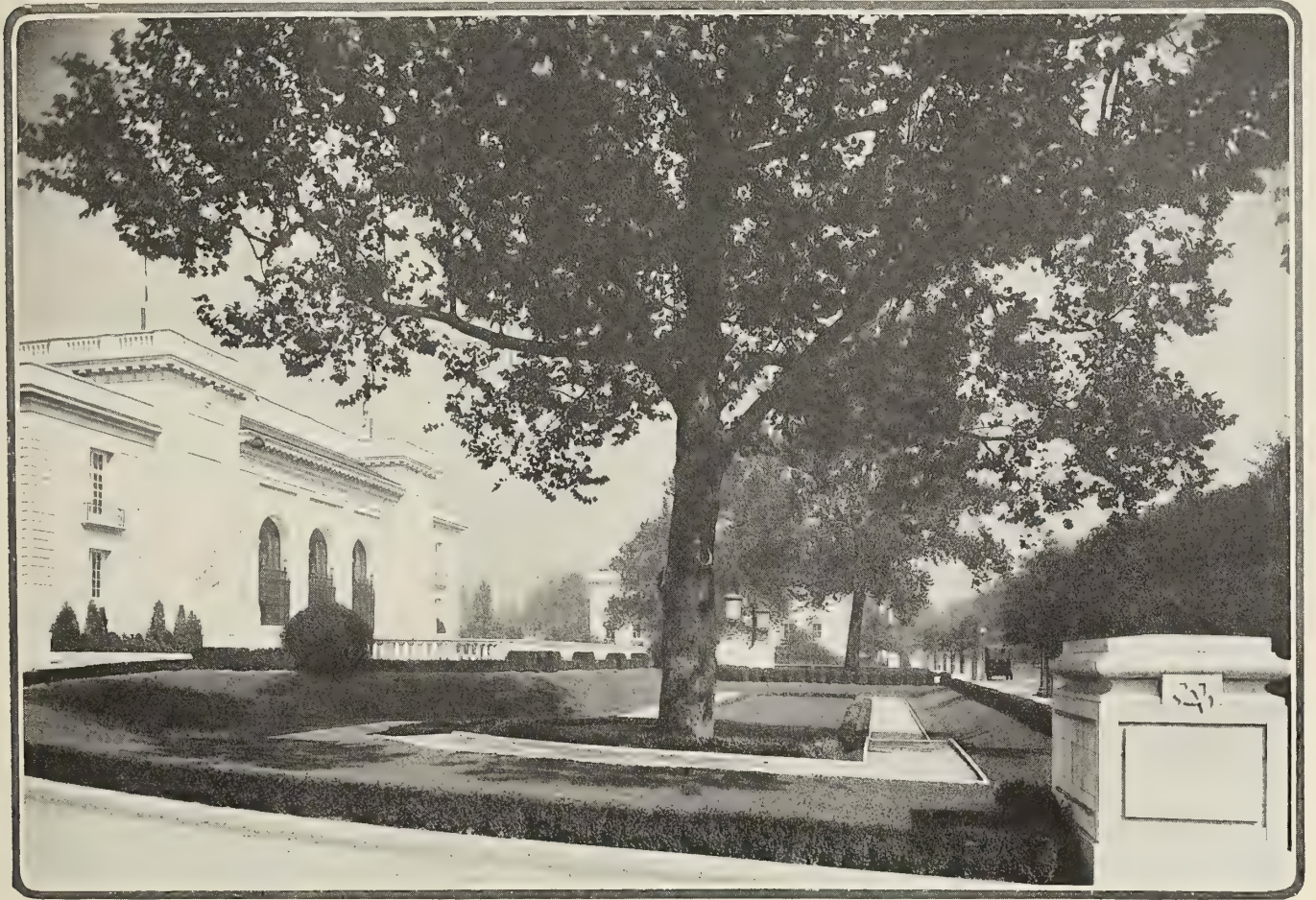


THE NORTH FRONT OF THE HISTORIC OLD VAN NESS MANSION

This is the present site of the Pan American Building, considered the architectural gem of the nation's Capital. The old house, of course, is gone, but many of the fine old trees surrounding it were preserved.

ington called "obstinate Mr. Burnes," owner of a considerable part of the land on which the national capital was built. One of the stipulations of old "Davie," when

the famous Benjamin Henry Latrobe, who in 1808 was selected by Jefferson as supervising architect to enlarge the Capitol. The house designed by Latrobe was finished



(Loaned by the Pan American Union)

THE OLD TREES GRACE THE NEW BUILDING

The beauty of the fine old sycamores, which were saved when the Van Ness mansion was razed, is fully appreciated in this view of the Pan American Building. It was necessary to destroy some of the old trees, but those which were left richly contrast the beauty of their present surroundings.

he turned part of his farm land over to the government, was that the modest cottage in which he lived, and which stood for many years near the elegant mansion built by his daughter and son-in-law, should not be interfered with in laying out the city. His little cottage stood until near the end of the last century as one of the curiosities of the city. Van Ness and his bride had their home designed by

in fine woods and marbles and decorated with sculptures brought from Italy; and it was long the scene of distinguished hospitality. One of the finest things about their stately home was its handsome trees and some of these, fortunately, have been preserved for the present day and generation to enjoy. Two of the old sycamores now flank the front of the Pan American Building.

Trees

[Continued from page 452]

them go, and yet we hear so much about free, wonderful, beautiful America. It is appalling ignorance and a monstrous greed.

The Pike County tragedy is only a little thing compared to the catastrophe of Washington, Oregon, California. In all the world there is nothing so beautiful, inspiring, healthful, and strength-giving as the magnificent forests of the West.

The dry, fragrant, brown-matted, golden-aisled, green-canopied forests of Arizona should never at any future time be cut. It is desert country. Only on the high uplands is there timber. Yet the forests are going.

On the Pacific slope of the mountains the crash of falling monarchs, the death-knell of the grand redwoods, never ceases. The dark, still somberly-green, lofty-spired forests of the Northwest are falling as prairie-grass before a driving wind of flame. And there is no way to stop a prairie fire.

If the government have any honest, wise statesmen, if the people have any desire to preserve for their children something of what is left of our forests, they will compel the destroyers to leave one tree standing, and plant another for every one they destroy.



AUSTRALIAN BLUE GUMS AT HOME IN THE UNITED STATES

The economic value of the eucalyptus in the United States is unquestioned, for it is capable of producing a larger volume of hard, useful wood in a shorter time than any other group of trees in the world. The upper picture shows a planting for wind-break purposes in San Bernardino County, California, and the lower picture is of a planting, also in California, for firewood.

Is There a Frost-resistant Eucalypt?

BY GEORGE B. SUDWORTH

OF the economic importance of Australian eucalyptus trees as producers of high-class hardwood timber there is no doubt. Even in this country, where we have over one thousand native and naturalized trees, and among these nearly two hundred timber trees of commercial importance, there is room for eucalypts, and particularly because these trees are capable, under suitable soil and climatic conditions, of producing a larger volume of hard, useful wood and in a shorter time than any other group of trees in the world. The cultivation of eucalypts was begun in this country about fifty years ago, and has since been continued with varying degrees of success, until at the present time over seventy-five different species have been tried, chiefly in California. The blue gum (*Eucalyptus globulus*) apparently has been the most widely and commonly planted species in California for wind-breaks, shelter belts, and for the production of wood. Eucalypts have been planted also in the warmer parts of Arizona, southern Nevada, eastern Texas, Louisiana, and Mississippi, and in southern Florida, where fifteen different species are now growing. So far, the largest number of species have succeeded in California, where also the greatest showing has been made of the economic value of these trees. Plantings outside of California have been chiefly for ornamental purposes.

A significant point brought out for all of the species so far introduced into this country is that they succeed only in tropical and subtropical regions. Repeated attempts to grow them outside of practically frostless sections have proved failures, because the species tried are unable to endure but a few degrees of frost. Up to the present time no one seems to have found even a moderately frost-resistant species that could be grown in our central and middle Atlantic States.

But during his recent travels in Australia Mr. Harry D. Tiemann, of the Forest Products Laboratory, Madison, Wisconsin, found a eucalyptus tree growing on mountain tops in Victoria and the southern part of New South Wales at elevations of from 4,500 to 5,500 feet above sea-level, which seems to have much greater frost-resistance than any of the other eucalypts so far tried in our temperate eastern climate. The tree is locally known as snow gum (*Eucalyptus coriacea alpina*), so called, doubtless, because in winter it stands in three or four feet of snow, where it endures a temperature of from 16° (Fahrenheit) and possibly down to zero.

So far as is known, this eucalypt has never been tried in any part of the United States. The small supply of seed which Mr. Tiemann was able to collect will be tested



SNOW GUMS AT HOME IN AUSTRALIA

The central insert is a large snow gum on the way to the Horn, near Lake Catani, at an elevation of 4,500 feet, flanked by two exquisite bits of scenery in the snow-gum forest, which might be peeps in fairyland.

to determine the tree's ability to grow here in comparably cold regions. While the snow gum is not a timber-producing tree in its native range, nevertheless it will be exceedingly interesting to find that this tree, the first of its kind, can be grown here outside of tropical regions.

The Eucalypts have long been known to science, the genus *Eucalyptus* having been established in 1783. At the present time about 340 different species are known. The Myrtle family, to which the eucalypts belong, is a large one, being represented by some seventy-four different genera. Its representatives, comprising trees and shrubs, are widely distributed in different countries and islands of the world, occurring in southern Europe, extra-tropical parts of Africa and South America, and sparingly within our border (southern Florida, in which two genera



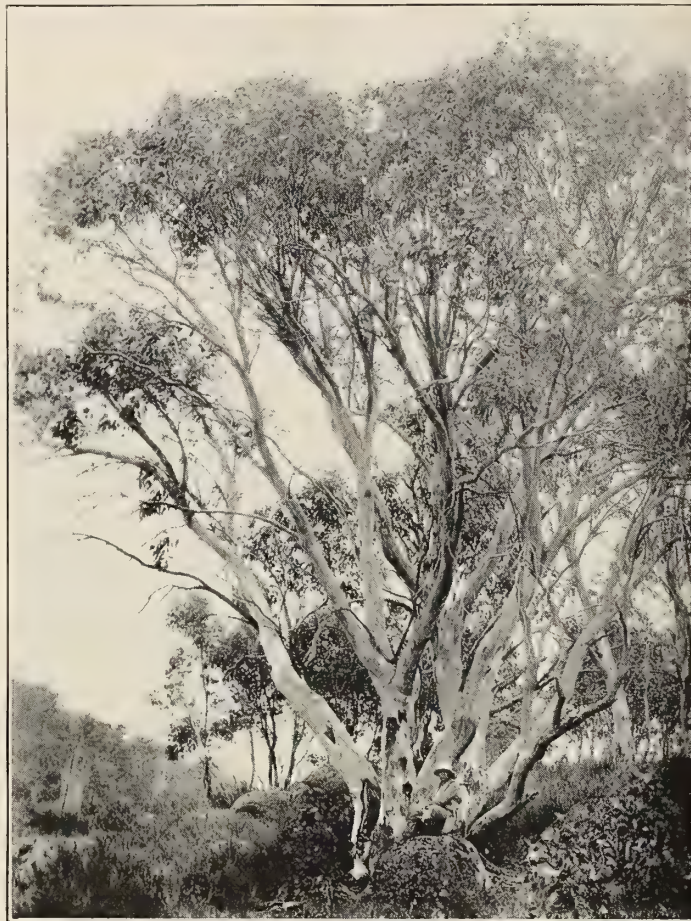
A KIND OF EUCALYPTUS PLANTED IN FLORIDA

The red mahogany (*Eucalyptus resinifera*) is a species of eucalyptus which is doing well here. The species so far introduced succeed only in our tropical or subtropical regions.

of small trees are found). Aside from the eucalypts, the Myrtle and the Guava are well-known representatives of this family.

A marked peculiarity of the Myrtle family is the presence in the leaves and other green parts of the plants of a pungent, aromatic volatile oil, which is particularly characteristic of the eucalypts. The medicinal virtues of the eucalypts early attracted the attention of herbalists and physicians. The medical importance of the oil obtained from the Blue Gum (*Eucalyptus globulus*) was the first to be recognized by the medical profession, while the oils of the other species, notably of *E. amygdilma*, *E. dumosa*, *E. citriodora*, *E. piperita*, and several others soon became

important for commercial purposes. The odor of the oil obtained from different species is often very distinct, and in some cases strangely like essential oils derived from other plants. The oil from *E. citriodora* is very similar



H. D. Tiemann

BEAUTIFUL SNOW GUM NEAR LAKE CATANI, MT. BUFFALO

This is the unusual, frost-resistant species of eucalyptus found growing on a mountain top in Victoria 5,000 feet above the sea.

to the oil of citronella (obtained from a tropical grass), while the oil from *E. piperita* has the odor of peppermint.

The early popular belief that eucalypts (chiefly the Blue Gum) had the power to eliminate malaria and mosquitoes from marshy localities is most interesting. It was believed that the pungent odor given off by eucalyptus trees was the active agent in accomplishing these results. Plantations of eucalypts made in about 1870 in southern Europe and in northern Africa, as at Lake Fezera (Algeria), actually rendered previously fever-stricken and mosquito-infested localities habitable. The relation of mosquitoes to various fevers was not then known, so that the influence exerted through the rapid and vigorous growth of the eucalypts planted in marshy ground in consuming enormous quantities of water, thus eliminating the essential breeding conditions for mosquitoes, was not appreciated as the real means of ridding these localities of malarial fevers and mosquitoes.

An American Visitor at Kew

"Come Down to Kew in Lilac Time, in Lilac Time"

By P. L. BUTTRICK

THE Royal Botanic Gardens at Kew, near London, are more than a collection of flowers, trees, and shrubs. Kew Gardens, as they are commonly called, are a British institution, almost a British Empire institution.

They are, in effect, the botanical and arboricultural headquarters of Britain and all her overseas domains. To Kew go plants, herbarium specimens, and botanical information from all over the world. From Kew go exchange specimens, technical and economic reports, and general information of value to the agriculturist, the forester, the horticulturist, and the workers in many industries dependent upon plant substances for their raw material. Kew is a sort of combination of Smithsonian Institution, Agricultural Department, Horticultural School, botanic garden, and arboretum all rolled into one.

Naturally, to the public, the arboretum and the Gardens proper are of more interest than the enormous store of specimens in the systematically arranged herbarium—the largest in the world—or the patient investigations carried

out in the laboratories, greenhouses, and working garden. Not only are the arboretum and gardens a vast museum of living plants from all lands and all climates, they are, owing to the consummate development of the landscape

architect's designs, extraordinarily beautiful and varied.

The interest which the British public takes in Kew is evinced by the fact that no less than 2,300,000 people have been known to visit it in one year. It offers all sorts of conveniences for the visitor, including a delightfully arranged open-air restaurant. Maps and guides may be obtained at the gates for a nominal sum.

Since Kew was founded in the reign of George II, it has age in its favor, but to succeed, it has had to overcome the obstacles of a poor soil, a rather limited area, a site with few natu-



THE COLLECTION OF WATER LILIES AT KEW IS UNRIVALED

A small pond developed from a natural swamp for the cultivation of the water-lilies of the temperate zone. Besides this, a greenhouse and a series of steam-heated tanks are maintained for the cultivation of tropical forms. In the background is to be seen part of the arboretum woods.

ral landscape features, and, of late years, the smoke pall of the near-by city of London. Nevertheless, the hundred and seventy-five years of its history have been years of progress and development. Originally the private property of the Crown, it was not until early in the reign

of Queen Victoria that it came under the authority of Parliament. It is now administered by a Director acting under the Board of Agriculture.

The names of many famous botanists are associated with Kew, but perhaps the most famous is that of Sir William Hooker, the first Director after the reorganization in Queen Victoria's time. Sir William found the Gardens consisting of some fifteen acres and equipped only with out-of-date and inadequate greenhouses. He expanded the area to nearly its present one of two hundred and eighty-eight acres, started the modern arboretum, and built most of the great modern greenhouses. These houses take one, by the passing of a glass door, from northern to tropical climates, and permit thousands of people to see growing tall and stately palms, tree ferns, magnificent orchids, and rare water-lilies found naturally only in the jungles of the Congo and the Amazon or the islands of the south seas.

But fascinating as are these greenhouses it is difficult to tempt people into them in fair weather, so interesting is the out-of-doors part of the Gardens. Although they do not distinctly center at any one point, the lake, one of the most attractive features, lies about in the middle of the Gardens. In addition to being a central landscape feature, its banks form an adequate environment for many kinds of moisture-loving trees and shrubs. Among them is an interesting group of American bald cypresses. These do quite well in the English climate and are grown under conditions very similar to those to which they are native. In consequence they have a very natural appearance. It is difficult to believe that this lake is entirely artificial, so well does it fit into the landscape.

Another very interesting feature which has been devel-

oped entirely artificially is the alpine garden. Tons of rock were brought in and arranged in artistic fashion to make it possible to grow alpine and rock-loving plants from the Alps, the Rockies, and all the other mountain regions of the world. The alpine garden is a favorite resort for visitors in early spring, when all these delicate and beautiful plants are in bloom.

But perhaps the artificial feature which comes nearest to making one feel that he is in another part of the world is the bamboo garden. It occupies a sheltered, low-lying spot in the midst of the beech woods.

The comparatively mild climate permits the growth of a tangle of bamboo plants which gives one a good idea of what bamboo thickets must look like in India and Ceylon.

Near by is the azalia garden, where are grown wild and cultivated varieties of the extraordinarily interesting and beautiful azalias, rhododendrons, laurels, heaths, and other semi-evergreen plants of a like nature. The wild plants of these groups form the originals of the garden varieties of many of our most brilliant flowering evergreen shrubs.

Certainly to the forester, and probably to the largest number of visitors, the most interesting feature of the Gardens is the arboretum. This covers the chief portion of their area. In the time of George II, a beech wood covered most of the present arboretum. From this beginning has developed the fine old beech wood of today and the modern arboretum, with its collection of 4,000 to 5,000 species and varieties of trees and shrubs. The arboretum is largely the result of the labors of Sir Joseph Hooker, son of Sir William Hooker, and his successor. It consists partly of more or less systematically arranged groups of allied trees, partly of rather informal woodland.



The advantages of this arrangement are that, by having related trees growing side by side, they can be studied and compared more easily. On the other hand, better results are frequently obtained, both from a forestry and from a landscape point of view, by growing trees in more natural combinations. In the systematic collections there are unusual opportunities for studying related trees from all parts of the world. For example, one may see, growing side by side, maples from Europe, Asia, and North America. In this way one gains a new idea of the variety in some groups and the lack of it in others.

Although there is a surprisingly fine collection of conifers at Kew, it has been developed by hard work in spite of an unfavorable soil and a smoke cloud from London. It is proposed to establish a new coniferous arboretum farther outside the city where sufficient land of a suitable nature is available and beyond the London smoke pall. In this work the British Forest Commission will co-operate with the authorities at Kew.

Among the famous features of the arboretum is the holly walk. It is an avenue nearly a thousand feet long,

lined with large and regular specimens of holly from all over the world. Its beauty is not confined to any one season.

By looking down the cedar vista, one has a view of a bewildering number of species of cedars, arbor-vitæ, and cypresses, among which are some excellent examples of the American redwood, which grows very well in England. These specimens are probably older than any second-growth redwoods in the United States.

Part of the arboretum is known as the Queen's Wood. The thatched cottage, standing in an open space in the wood, was once the private property of Queen Victoria. Its architecture is more in accord with rural England than the vicinity of London.

The American visitor naturally finds trees of American origin growing at Kew of great interest. Many of our common ones are especially well represented; others, for some reason, are seemingly absent. It is worthy of note that, owing to similar climatic conditions in England and our Pacific Northwest, trees from that region generally do better at Kew than those from our Eastern states.



A DELIGHTFUL BIT OF LANDSCAPE AT KEW

Many of the buildings at Kew are unique. In the distance here is to be seen a relic of the landscape school of the days of George III. Kew has great interest and value to the botanist, horticulturist, and florist. The museums are of particular interest in view of the recent large development of forestry in the British Isles.

Among our Eastern trees the tulip tree is perhaps the best represented. There are a number of specimens growing along a roadway known as Tulip Tree Avenue. In another part of the Gardens are found growing two artificial varieties of our common American tulip tree, which are unknown, or practically unknown, in America. One of them is called the fastigiate form; it has an upright branching habit similar to the common Lombardy poplar. The other is known as the golden variegated form. In it the tissue along the midrib of the leaf is a bright yellow color. Both these forms are attractive and unusual, and would be well worth the attention of gardeners and tree lovers in the United States.

There are exceptionally fine examples of the American red oak, the red gum, the persimmon, the box-elder, the black locust, the redwood, the Douglas fir, and the Colorado blue spruce scattered about in the gardens and arboretum. It would be fatiguing to catalog all the American trees found at Kew. Part of the delight of the Gardens is to come upon these familiar friends in unusual settings. One is tempted to wonder, however, if some of our famous trees, like the American elm and the sugar maple, might not be given more prominence than they are accorded.

The system of labeling at Kew is generally quite adequate. In the arboretum most of the larger trees are labeled not only with their scientific and common

names, but also with a brief account of their range, habits, and economic importance.

The early stages of the development of Kew were at a time when the practice of landscape architecture called for the building of various classical or highly ornate structures in gardens, such as pseudo-Greek temples, pagodas, ruined castles, and the like. Many of these structures

still remain at Kew. Some of them, notably the classic temple of Æolus, have been woven into the modern landscape scheme to produce delightful results. In other cases, we may perhaps be permitted to regret that time has dealt so gently with the work of the architects of the period of George III. Some of the worst examples, however, are said to have been removed.

One structure which is of great interest to Americans is a flagstaff of Douglas fir, brought from British Columbia. It is two hundred and fourteen feet tall and two feet in diameter at the upper end. One



NATIVES OF SCOTLAND

These two old Scotch pines, picturesquely located, are among the tallest trees in the Gardens. Old-fashioned flowers, such as asters, hollyhocks, larkspur, sweet-william, sweet-peas, sunflowers, pansies, mignonette, love-lies-bleeding, carnations and pinks, dahlias, phlox, and peonies, are planted in bold masses—brilliant splashes of color amid the green.

wonders if our Pacific Northwest might not interest itself in supplying an even taller pole.

Visitors wander for days at Kew without ever going into any of its numerous buildings. The greenhouses have already been mentioned. Some are for orchids, others for water-lilies, and so on.

A greenhouse is seldom a particularly beautiful object to look upon from the outside. But at Kew great care has been taken to have them fit successfully into a land-

[Continued on page 504]

"The Forest Ranger's Wife"

BY ALICE STEARNS DE CAMP

FOR eight years I have been the wife of a forest ranger. I would not have my husband change jobs with any one in the world. Ranger life has huge drawbacks; its demands on the women who share it are tremendous, but taken on the whole I can say with the Tramp Royal, "So write, before I die, 'e liked it all.'"

What outstanding feature is there to differentiate the wife of a forest ranger from the wife of a store clerk, or a business man, or a teacher, or a farmer? The answer is, in location. For just as there has to be a store for the clerk, a school for the teacher, and a farm for the farmer, so there must be a forest for the forest ranger. And life in a forest, be it but the brush hills of southern California, or the wind-swept high mesas of New Mexico, means inevitably, isolation, lack of conveniences, and distance; distance from towns, from neighbors, often from railroads.

When I was married we took a night train to a city, next day an all-day auto-stage ride into the mountains, to a small town fifty miles from the railroad, from where the only way to reach our station twelve miles further on up the mountain was by horseback. And I had scarcely even realized that horses had backs! Much less that they had to be straddled for several wearying hours!

Neighbors? My nearest one that first summer was a half-breed Indian Squaw, five miles away, with a hard-drinking Irish husband and a pack of dirty, staring, silent children. And I grew fond of her in

spite of it, because under the conditions of the life I entered then, human relationships formed a part of one's every-day work.

"Public Relations" is a guide title in a forest ranger's file, and no small factor in his work. There-

fore, besides liking that Indian neighbor, I learned it was "up to me" to make her like me. That made for pleasant relations between her husband, whom the Government sometimes hired, and my husband.

Conveniences? I have lived in houses with hot and cold running water and houses with no water at all; in one where cold spring water ran in and out of a two-foot tank in the kitchen, and in another where cold water ran in, through a faucet, without a sink or even a drain pipe to take it out! And, of course, I've lived in camps and tents where one packed water perhaps a quarter of a mile, and even in one house where there was running water in the corral, for the convenience of the stock, whither I had to repair for my wash-water, while the drinking water I bought, delivered three times a week in ten-gallon milk cans! But such hardships as these and others incidental to living in ranger stations built on an allotment fixed by Congress at a figure about right for a modern bathroom, are measurably lessened by our ranger husbands, who, of necessity, soon become jacks of

Winner of First Prize in American Forestry's Prize Contest for the best story describing the life of the Forest Ranger's Wife



"HERSELF"

The girl who wouldn't have her ranger husband "change jobs with any one in the world."

all trades. It is my boast that my husband has improved every station and house we have lived in. I believe the shelves that man has put up for me if assembled would



THE "CASTLE" OF THE FOREST RANGER

Set high in the beautiful Sierras, this home in the forest was one of which the ranger's wife was justly proud.

build a whole house. Another little drawback in ranger life is the lack of a home. Uncle Sam furnishes his rangers with quarters, and rangers' wives the country over attempt to make them home-like, but it never can be a real home, never our own, and moreover we are only too apt to be moved just when nicely settled a few months. In fact, we moved every six months the first six years. We have worked on eight different National Forests, and in three states. Each move proved to be an eye-opener, and we have been very fortunate in our locations. We began in the Sierras of California, near the lower end, between Kings and Kern rivers. The following winter saw us on the south side of the gateway to southern California, high up on San Jacinto, camped beside Lake Hemet. After another summer on Greenhorn Mountain we went farther north on the Sequoia Forest, among the wonderful redwoods between the Sequoia and Grant National Parks. From there we jumped to Arizona, nine thousand feet high in the White Mountain country, the hunting ground of Zane Grey, Henry Herbert Knibbs, James Willard Schultz, and other outdoor writers.

After a few months on the high ranges of western New Mexico we went up-state to Taos, than which there is no more picturesque and interesting

spot in the Southwest, as witness the flock of artists who make Taos and the surrounding Indian pueblos their Mecca. Again we moved, after a year in famous old Sante Fe, and still fortunate, we came to the wonderful Lake Tahoe vicinity in California's High Sierras, where thousands of tourists, both winter and summer, envy us our proximity to that feast of nature's most lavish beauty. How many business men's wives, or farm women, can boast such settings for everyday life? Nor is that all. From such heights as these it has been almost no effort at all to climb still higher, to view the world from humble and awe-filled eyes from eleven, twelve, even thirteen thousand feet elevation. Time and again I've left my housework for pack trips with

my husband, each a renewed honeymoon, and the end is not yet!

However, this constant moving has not always been easy. For instance, we were quite well settled in a comfortable station on the Apache Forest in Arizona, and, with every expectation of being there two or three years. We had arranged the unusually well-built station into as homelike a place as we had ever had. We had a two-year-old child and expected another in about three weeks, when in dropped Uncle Sam, in the person of our Forest Supervisor, to tell us that we were transferred and the incoming ranger wanted the house in five days! Moreover, we were a hundred and twenty miles from a railroad and a doctor.



OFF ON A SECOND HONEYMOON

Shedding her bungalow apron and starting off on a pack trip into back country with her ranger, meant to this girl a renewal of the joy and fun of honeymoon days.

My husband was too new in the Service to ask any favors, so he accepted the transfer, and I hurried our second child into the turmoil of life two weeks early, with the help of my husband and a neighbor who was generous-hearted enough to take us all in! After a few more years in the Service we have learned that a favor of a week or a month may be had for the asking, and all the danger and hardship was unnecessary, had we known. For Uncle Sam is the kindest and most reasonable of employers—in all matters save one. And herein I come to the outstanding hardship, the main big problem of a forest ranger's wife, namely, how to live on a forest ranger's salary! Exist, yes, we can do that; it's a living wage he gets, but to enjoy rather than worry, to raise a family, to plan for the future, to save for a "some-day" home of our own—it is all but impossible. Nowadays,

the average forest ranger starts at \$1,200 a year. We began at \$1,100 eight years ago, and in a very short time were forced to learn the secret, and I think the only one, of getting along on such a small sum. We do without everything we can, but when we have to have something, we buy it "on time." Furniture, horses, bonds

in wartime, even our babies, all "on time," and that first year saw us clear up some small debts, buy one horse and one baby, so we knew it could be done and have managed ever since.

But it is even harder now on \$1,500. And where does the children's schooling come in? Each month they need a larger slice of the check. Or the "some-day" home we dream of owning, or old age, or prolonged illness, or death? There is scarcely any other work for a trained man as poorly paid as Uncle Sam's rangers. Not long ago my husband was offered work with one of the greatest industries in the country at twice his present salary and every chance of working up quickly, and it made us stop and think. But not for long. There is just one thing about ranger work—we like it! Never monotonous, mostly outdoors, always in or near the mountains—healthy, happy, wholesome work!

But where does the ranger's wife come in? Into most all of it, into the thick of it! She has to know something

of every phase. Often she has telephone service to attend to. At one station I had to connect calls from one National Park to another; from the Supervisor's headquarters to the other ranger districts, and from any one in the valley wanting any one in the back country—all free service often requiring several hours a day at the telephone! Once when I came in from a ride I heard the phone ringing like mad, so I ran in, leaving my horse at the back door. I dumped my creeping baby down on the office floor, and when, a half hour later I was able to leave, I saw no baby. I ran through the house and found her with both arms around one leg of my horse, as her way of asking for more ride!

Time and again in the days before despatchers I have had to drop everything to go for men to fight fire, or take them food at a fire, or deliver vital messages. I have had

to choose between leaving the baby alone for an hour or two, or packing her in my arms through brush and forest. Often I wished I had an Indian pappoose outfit! Now that the fire protection is better organized the ranger's wife is paid for phone work, which helps, but it involves staying at home in case of a call, which means giving



STARTING OUT FOR THE DAY'S WORK

"Every hand a helper" is the slogan in this family, as the ranger hits the trail for a day of surveying, counting of sheep or cattle, repairing telephone lines, or perhaps one of the other multitudinous duties with which his life is crowded.

up in fire season the one thing above all others I enjoy—freedom to go with my husband as few wives go, to share his trips as few wives can. Not long ago I helped him put up the pasture fence after its hibernation under the snows. I've often gone along when telephone repair work had to be done, or a homestead surveyed, or a summer home site staked, or timber scaled. I've helped count sheep and cattle, even counting them alone when occasion demanded it. I type his correspondence, and thus know more of his "business" than the truly business man's wife knows of his, or the grocer's, or the teacher's.

Another task that falls to the lot of a ranger's wife is "entertaining" officers from the Supervisor's or District Forester's headquarters. I was as fussed as any city bride the first time I had to serve a meal to men from the District Office. Now I welcome them as easily as if a neighbor dropped in. And they supply the desirable touch with "civilization," as represented by city life, that we would otherwise be without. Broadening, interesting,

and often vital are the visits from superior officers, and even though they talk a great deal of shop the ranger's wife need not be excluded. In some localities there are assistants or guards to board, and occasionally we have had as many as six or eight men with us at once.

Uncle Sam allows such officers to pay us ranger wives just fifty cents a meal and seventy-five a lodging, though they may pay what to us would seem an exorbitant restaurant or hotel bill without a protest. I've had to learn to buy food in quantity, perhaps for six months at once, and my first attempt was ludicrous, as I over-ordered fearfully. But, fortunately for our finances, we were so situated that when a tremendous storm washed out all communication with the valley below I had plenty of groceries for three families marooned with us for those four weeks. Incidentally we were living in a 14 x 14 tent

that time, and the storm blew it down on us, so we had to move into the only available house, although the other three families were already in it!

My husband calls me his pal, and perhaps that sums up more than any other word (unless it be helpmate) the reason I enjoy being a ranger's wife. Few wives have the chance a ranger's wife does for helping in and sharing their husband's work. Few wives have more glorious locations in which to do routine housework. Few wives are freer from conventional drudgery that cramps and stifles personality and prohibits mental growth and wider vision. Few wives can take such care-free and unusual trips, and all without great expense, effort, or excitement. Few mothers can give to their children a more normal and natural start, and a closer touch to nature, the greatest teacher in the universe.

A Pure Stand of Sassafras

BY GEORGE N. LAMB

THE writer recently experienced the novel sensation of looking out across a veritable forest of sassafras. This unusual and distinctive stand of timber is located on the outskirts of Paris, Edgar County, Illinois, and is directly across the highway from the sawmill of

showing, is singularly striking. They vary from twelve inches to twenty-four inches in diameter and have a rather uniform height of seventy-five feet. From appearances, I should judge that it is an evenly aged stand, although this point was not determined. The age of the timber is



THE FOREST OF SASSAFRAS AT PARIS, ILLINOIS

Photographed by C. McKinney

T. A. Foley, an Illinois hardwood lumber manufacturer who is greatly interested in practical forestry.

When this piece of timber was first called to my attention it was with much hesitation that I finally ventured to say "sassafras." With the exception of a single black cherry tree, it is a pure stand of sassafras trees. Their appearance, particularly in winter, with every branch

doubtless considerably over a hundred years. The trees now appear to have reached full maturity and are growing very slowly, although on very fertile soil.

There is not a single tree in the grove with a straight, upright bole. Most of the trees display characteristic short crooks or long, sweeping curves that would make a single straight ten-foot log very hard to find.

Dogies and Dudes

BY ARTHUR HAWTHORNE CARHART

"WHAT sort of a layout is that?" I asked Krueger, Supervisor of the Gunnison Forest, as we sped by in our flivver.

"Cow outfit," he replied. "They run a few tourists in the summer, too."

"Would you say it is more of a cattle ranch than a dude ranch?"

"Yes; the owner is certainly more of a cowman than a dude-wrangler."

The ranch in question is typical of many in our western National Forests. There is excellent recreational country in the Forest on all sides. The owner, taking advantage of these conditions, had constructed a dozen small cabins near the ranch house to care for tourist guests.

"How many cows does he run?" I asked Krueger.

"With the range he has on the Forest and such winter feed as he can cut, he handles about sixty head," said Krueger.

"What is his annual cow crop?" was my next question.

"His maximum is about twenty."

"And they will bring him a gross return of about \$50

each," added Deputy Supervisor Clarke, who was steering the flivver back to its home port at Gunnison. He had begun to sense the trend of the conversation, for we had been discussing the value of recreational resources to the community and the lack of study, development, and supervision of the tourist business in our National Forests.

"That means that his total gross in cattle from his ranch and the range he has under permit in the Forest returns him about a thousand dollars a year? It represents all-year work? He has to cultivate as much of his ranch

lands as possible in the summer to get enough feed for the winter, and if he did not have range on the Forest he would not be able to run more than a half or a third of the stock he now owns?"

Krueger nodded assent.

"Now tell me about his tourist business," I asked.

"You saw the cabins," said Krueger. "The capacity is about forty guests. The season here is about a hundred days and it is probable that he will average thirty people a day on the place throughout the season."

"Dogie."—An orphan yearling cow. A term commonly used in the West to apply to long-horned or somewhat scraggy animals generally indigenous to the mountains.

"Dude."—Any tourist or traveler, not a native of the state, who is enjoying a vacation in the western mountains. Old forms of the expression are "tender-foot" and "green-horn." Feminine, "Dudeen."



MANY LAND-OWNERS HAVE GONE INTO THE DUDE RANCHING BUSINESS BECAUSE THE PROFITS SHOWN FROM SADDLE STOCK, AS WELL AS HOUSING AND BOARD, MORE THAN JUSTIFY THIS EXTENSION OF THE PROPRIETOR'S ACTIVITIES



THE BUSINESS OF GROWING CATTLE HAS HAD RESEARCH, PLANNING, AND OTHER AID IN THE NATIONAL FORESTS

"What does he charge?" I asked.

"Well, the average charge is about three dollars and a half a day in this section," said Clarke. "That brings him a gross return of \$10,500 for his tourist season, not counting what he gets from renting his saddle stock."

"What do you suppose he gets in profit?" I asked next.

"He grows a lot of his meat on the ranch, all of his vegetables, and about all he has to buy is his staple groceries. The cabins he built himself from logs which he bought from the Forest, and they represent little cash investment. He should be getting nearly a dollar a day profit from each tourist."

"We'll call it half that," I said, for in his own figures Krueger had amply proven the vital point of our conversation. I proceeded to sum it up:

"Now, he uses not more than three or four acres of his ranch and near-by forest for his dude business, runs it a hundred days a year plus what time is necessary for getting ready and overhauling his equipment each season, has an output of three thousand recreation days per year at a profit of fifty cents each. That is a net return of \$1,500 per year. On the other hand, he runs sixty cows 365 days in the year, uses all his ranch, has probably three times the investment in them that he has in his tourist business, and takes more risk on it, for all of which he gets about \$1,000 gross a year. His net profit from the cow business cannot be more than a

half or a third of that from the tourist business. What kind of a ranch did you say it is, Krueger?"

"I'd never figured it out just that way," he replied. "Looks like it's a dude ranch, sure enough, with cows as a side line. One thing is certain, he is making more money, with less effort, less risk, and less investments, in his dude business than in the cow business."

These forest men had always looked at the summer-tourist business as a side line, but here, by their own figuring, they found that a ranch which they had always considered a strictly cow ranch was in fact getting

more out of its limited recreation facilities than from its cattle business. And whereas the cattle business now was developed to the full capacity, the tourist business, with good planning and direction, could be expanded to ten times its present size.

This incident was the start from which the town of Gunnison, Colorado, headquarters of the Gunnison National Forest and near several other National Forests, started to organize the local recreation business along community-wide and business-like lines. The town first made a tourist survey. Every dollar spent there during the week starting September 2, 1922, by any person properly classified as a tourist was put down by the resident



IN MANY OF THE FORESTS RECREATIONAL DEVELOPMENT HAS NOT KEPT PACE WITH TOURIST DEMANDS. THE RECREATIONIST VERY OFTEN HAS TO SHIFT FOR HIMSELF

selling him supplies or service. This record was turned in to the local Commercial Club. The sum total startled every one, especially the old-timers.

Gunnison had always considered itself the headquarters of an extensive cattle business; but in that one week they found that tourists spent over \$4,600 by actual count. Then they began to realize that Gunnison was also a tourist town. The bulk of the travelers had gone home; but, using these figures and other data which came to light during the survey, it was conservatively estimated that this town of less than two thousand inhabitants was about \$60,000 a year richer because of its tourist trade. Including near-by resorts, the tourist business for the county would exceed \$100,000.

Gunnison rubbed its eyes. This business had grown up without any attention on the part of any one. What could they do with an organized community effort and a reasonable amount of funds to put their recreation offerings on the market in a well-ordered business-like manner? It was perfectly possible that they might even double this tourist trade in two years if it were given thought and direction. Was not Gunnison surrounded by recreational assets in the form of National Forests?

The Commercial Club started in getting more data on which to go ahead and make "dude-wrangling" a regular business of the community. It made a survey of the investments represented in tourist-service establishments of the county. It found out where there are good loca-

tions for future resorts. It knows how much property and money serve tourist trade and how much of a loss to the section would result if this were obliterated. It studied the fish population of its streams and started plans for getting every stream up to the optimum of fish life.

In short, Gunnison has awakened to the fact that the dude industry is as much a business as the cow business;

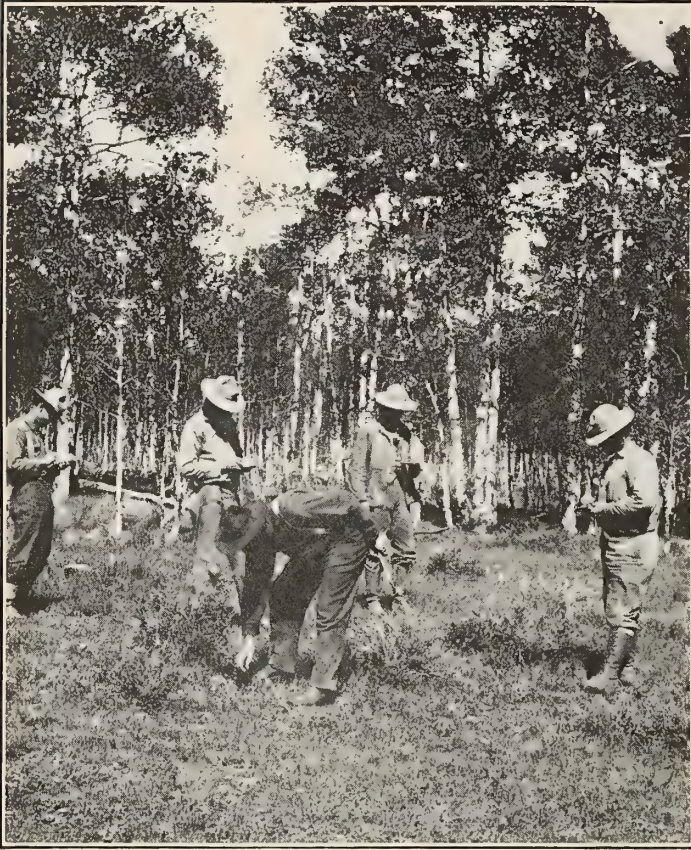
that it has not had the attention that it merits in the past, either on the part of the Government or the local people, and that the future business depends on an efficient organization of the recreation resources of the community. But, as all their recreation resources are in the National Forests, which are the property of the nation, administered by the U. S. Forest Service, there must be Federal approval and support for the improvements necessary to insure the fullest utilization of these resources. This situation is not unique. It exists through-



A VALUE BEYOND PRICE—THE GENEROUS GIFT OF THE FORESTS. DOES NOT THE INCOMPARABLE BEAUTY OF OUR GREAT OUTDOORS JUSTIFY THE MOST CAREFUL STUDY AND DEVELOPMENT OF ITS RECREATIONAL POSSIBILITIES?

out all our Western National Forests. The one unusual thing is that this town has become actively engaged in meeting tourist needs in a sane, organized manner.

The tourist business for the entire State of Colorado is reckoned at \$40,000,000 for 1922. Most of it depends on territory in our National Forests. One publicity man made the statement that several years ago California tourist crops had become more valuable than the combined orange, lemon, and nut crops of the state. Other



ONE GRAZING RECONNAISSANCE CREW SUCH AS THIS, WORKING ON ONE FOREST FOR ONE SEASON, COSTS ABOUT AS MUCH AS THE ANNUAL MEAGER APPROPRIATION FOR FOREST RECREATION IN 149 NATIONAL FORESTS IN 24 STATES AND CONTAINING 156 MILLION ACRES. THE COWS HAVE DECIDEDLY THE BEST OF IT

states containing publicly owned forests reap a tourist harvest in proportion.

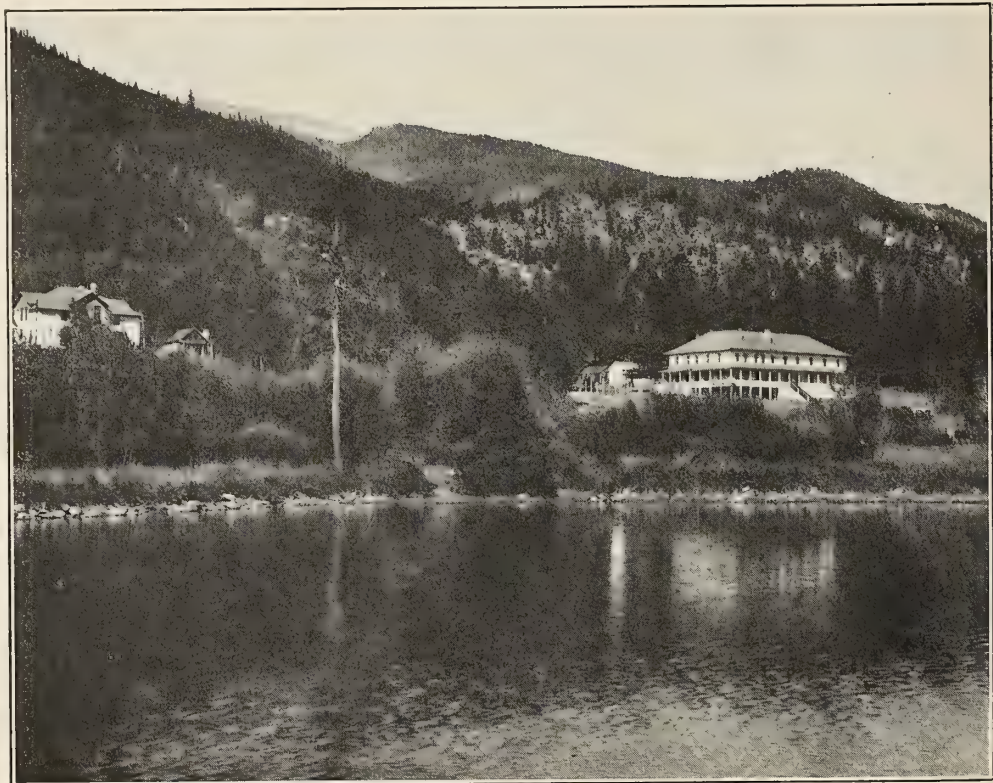
If this business exists in the National Forest areas and means more people earning a living in these western regions, why is it not just as logical to encourage it as to foster other industries centering around our publicly owned forest lands? However logical this seems, it has not been done. Where there are scores of men engaged in the study of the grazing industry within the Forests and many, many more engaged in directing and developing the timber business of the Forests, there is no adequate organization within the Forest Service to study, plan for, and develop this recreation industry. Adequate funds are not allotted to the work. Only one or two men are definitely engaged in it, as opposed to the scores of men and the considerable appropria-

tions available for other lines of forest development. The Forest Service cannot be blamed for this state of affairs. Although attention has been called to the recreational value of the Forests, Congress has never appropriated adequate funds to meet the growing demands from the public. The scenic values found in our National Forests of the West are the foundation of a very considerable—nay, major—industry in which thousands of people throughout the whole United States are vitally interested. Perhaps a part of this neglect is due to the fact that Congress, with others, has looked upon the National Parks as being the sum total of our western recreation grounds. They are not the only playgrounds of the country of national importance; never have been and never will be. They are magnificent and yearly fulfill their function in a great way; but there are more communities which have in them a considerable recreation industry dependent on values within National Forests than communities dependent on recreation business created by the National Parks. These Forest towns are not and never can be dependent on any National Parks bringing them tourist trade. If they get it, it will be because of values in the National Forests.

And, what is more important, recreation use of the National Forests far exceeds the use of the National Parks. This is not well known, but governmental estimates show that for the past few years there have been nearly five times as many tourists in the National Forests as in the National Parks.

This is no argument against National Parks. They

[Continued on page 511]



A TOURIST RESORT IN THE HEART OF NATIONAL FOREST COUNTRY AND ENTIRELY DEPENDENT ON THE FOREST FOR ITS ATTRACTIVE POWER. THINK OF THE INVESTMENT SUCH PLACES REPRESENT IN THE AGGREGATE, AND WHAT A RICH RETURN THEY OFFER

Woods Used by the Ancient Egyptians

BY SAMUEL J. RECORD

Photographs by courtesy of the Metropolitan Museum of Art, New York City

AS one wooden object after another from the tomb of Tut-Ank-Amen is described and pictured in the public press, many questions arise. What kind of woods are these? Whence did they come? Are their counterparts in existence today; and, if so, can any evolutionary changes be noted during the elapsed centuries? What preservatives kept these woods sound for thousands of years? And how are these woods identified with certainty?

The writer has seen none of the things found in this particular tomb, but through the courtesy of the Metropolitan Museum of Art he has had opportunity to make an intensive study of numerous wooden articles believed to be fairly representative of the period from Dynasty IV to XX, or from about 2900 B. C. to 1200 B. C. The materials chosen included coffins, coffin nails, canopic boxes, statuettes, throwsticks, mallets, yokes, head-rests, reels, spindles, cramps, and miscellaneous utensils. Wood played an important part in the life of the Egyptians, and, with minor exceptions, all of it had to be brought long distances. The kinds used were not very numerous.

One of the most prized of all woods was the cedar. This name has come to be applied to a great many different kinds of trees all over the world, but the original cedar is what the botanists call *Cedrus*, the most famous species being *Cedrus Libani*, the cedar of Lebanon. This is a native of Lebanon and throughout the Taurus Range in Asia Minor, and there are two closely related species which some botanists consider only varietal forms, one in the Atlas Mountains, in northern Africa; the other, the Deodar, in India. Biblical writers were greatly impressed by the grandeur of the cedars of Lebanon and extolled the merits of the timber. The trees attain a height of 150 feet and diameters of 10 feet or more, and throw out lateral branches of massive size which impart a majestic appearance. The species was introduced into England for ornamental planting in 1683, and magnificent specimens now exist which are 100 feet tall and eight feet through at the base. The original forests in Lebanon have been destroyed. In 1860 there remained nine groups of the

cedars, about 400 trees in all, ranging in age from 100 to probably 2,500 years, and in height up to 120 feet. The cedar of Lebanon is no myth, as some, who have seen only occasional gnarly and scraggly specimens of it, are inclined to believe.

The ancient Egyptians used cedar extensively for coffins, boxes, large effigies, and for such general purposes as we employ white pine. Its wood is fragrant, repels insects, and resists decay. It could be had in large sizes, free from defects, and, being light in weight, was comparatively easy to transport. There is considerable difference in the quality of the timber growing in different places, that from the higher elevations being harder and stronger than that from the foothills, where growth was more rapid. The specimens examined illustrated these differences plainly, but there seemed to be no way to ascertain whether these variations corresponded to conditions of growth or represented different species. Study of the minute anatomy of the several specimens failed to throw any light on the question.

Another coniferous timber noted for its durability and longevity is the cypress, *Cupressus sempervirens*—a tall, somber-looking tree of the Mediterranean region, Asia Minor, and Persia. The fine-textured, reddish and fragrant wood resembles our pencil cedar and is said to have been used by the ancient Egyptians for mummy cases, though the writer did not find it during his investigations. The trees have the fastigate habit of Lombardy poplar and sometimes attain a height of 100 feet or more and a basal diameter up to seven feet. The gates of Constantinople, destroyed by the Turks in 1453, were made of cypress and were perfectly sound 1,100 years after their construction. The gopher wood used in making the Ark of the Covenant was probably cypress.

The thiyne wood of Apocalypse xviii, 12, was probably what is now known as Atlas cypress, *Tetraclinis articulata*, of Morocco and Algeria, the citron wood of old Roman days.

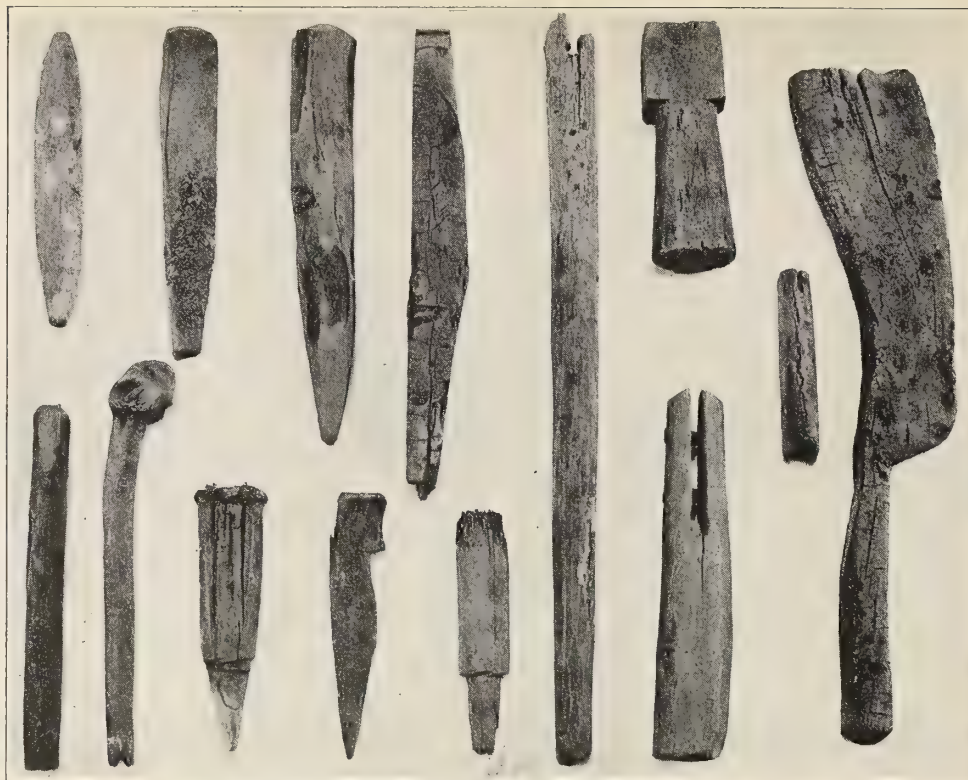
The coffin or canopic box of Senebtesis, reign of Amenemhat I (2000–1970 B. C.) was made of yew, *Taxus baccata*, and the fragment studied was in such an



advanced stage of decay that it could be pulverized between the fingers. The yew is widely distributed in Europe, northern and western Asia, and northern Africa. Ordinarily it is of low stature, with a thick, fluted trunk, but in the Himalayas it attains a height of 100 feet. It is a long-lived tree, and most of the old

places in England and Scotland have their historical yews, and the records of some of them date back 1,000 years. The wood is hard and heavy, very fine-textured, and highly elastic, properties which have won fame for it in the realm of archery. The Egyptians used it for bows, carvings, and small implements. It is as noted for durability as are the cedar and cypress.

One of the oldest specimens examined was a head-rest, Tarkhan, Dynasty IV-V (2900-2600 B. C.), which proved to be a species of *Cordia*, probably *Cordia Myxa*.



MISCELLANEOUS WOODEN UTENSILS OF THE DIM PAST

This is a medium-sized tree of the Borrag family, native to Egypt, Persia, Arabia, India, and the Malay Peninsula. Because of its edible fruit, it is known as Sebestan plum, but it has many other names; for example, "nakkeru" (Telug), "bukampadaruka" (Sanskrit), "lesura" (Hindu), and "lebuk" (Arabic). The wood is olive-colored,

grayish or light brown, coarse-textured, and rather light in weight, but tough and strong. It was used for coffins, boats, and general carpentry and apparently was about as common as cedar. *Cordia* woods often have a peculiar mealy look, with a golden subsurface luster. The 5,000-year-old head-rest was badly decayed and falling to pieces, but in proper light the characteristic luster was undimmed.

Occasionally one sees a reference to the use of sycamore for mummy cases and is likely to think that this is



MANIFOLD OBJECTS, SURVIVING THE AGES, REMIND US OF CIVILIZATION'S LASTING DEBT TO WOOD

the same as our sycamore. The sycamore of the ancients, however, was a fig (*Ficus Sykomorus*), an evergreen timber tree sometimes called the fig-mulberry. Its wood is of about the consistency of soft pine and is of a peculiar laminated structure, layers of true wood alternating with somewhat thinner layers of unlignified tissue. It is light in weight and easy to work, but soon perishes in contact with moist soil or falls a ready prey to insects. A spindle from the North Pyramid at Lisht, dating back to about 1200 B. C., proved to be of this wood and was in an excellent state of preservation.

Tamarisk was well known to the early Egyptians, and was cultivated by them for decorative purposes in much the same way as it is now throughout the gardens of the milder regions of the world. There are many species of tamarisk (*Tamarix*), all shrubs or small trees of graceful and distinct appearance, with light and feathery foliage and large, loose panicles of pinkish flowers. They will grow almost anywhere that the climatic conditions are not too rigorous, and are often planted along irrigating ditches in arid regions and by the seaside, where nothing else will thrive. The wood is fairly hard and strong and served many useful purposes, particularly where only small sizes were required, such as coffin-nails or dowels, mummy-labels, handles, etc. A peg used in locking a corner of the coffin of Ibsenhotep from the South Pyramid, Lisht (2000-1780 B. C.), seemed upon first examination to be as sound and strong as though it were new. A bit of it was boiled in water to make sectioning easier, whereupon it resolved itself into a mass of cottony fibers. This breaking down of the substance cementing the cells together is attributed to slow chemical changes, since the microscope failed to reveal any trace of fungous injury.

The writer found no true ebony, and such objects as were pointed out to him as of ebony proved to be of some dark-colored leguminous wood, probably some species of *Dalbergia*. This is of tropical origin and may have come from India or from central Africa. The so-called true ebony is the heart wood of a species of *Diospyros*, the genus to which our common persimmon belongs. The trees are common throughout tropical Asia and Africa, and while some of the wood is jet black, others are variously colored and often variegated. It has been suggested that the original ebony was a legume and not what it is now commonly accepted to be, but this may or may not prove to be the case. A throw-stick and a mallet were made of some leguminous wood suggesting our locust, but this family is so large and so little is known about many of the trees that specific identification by the woods alone is very frequently impossible.

A worm-eaten head-rest was made of some hard, fine-textured wood of the family Sapotaceæ, probably *Argania Sideroxylon*, the "argan" or Morocco ironwood. This family is confined to tropical and warm regions and many representatives are cultivated for the fruit, such as the sapodillo, while others yield a latex from which



WITH THE SAME STURDY DIGNITY HE FACED THE WORLD
5,000 YEARS AGO

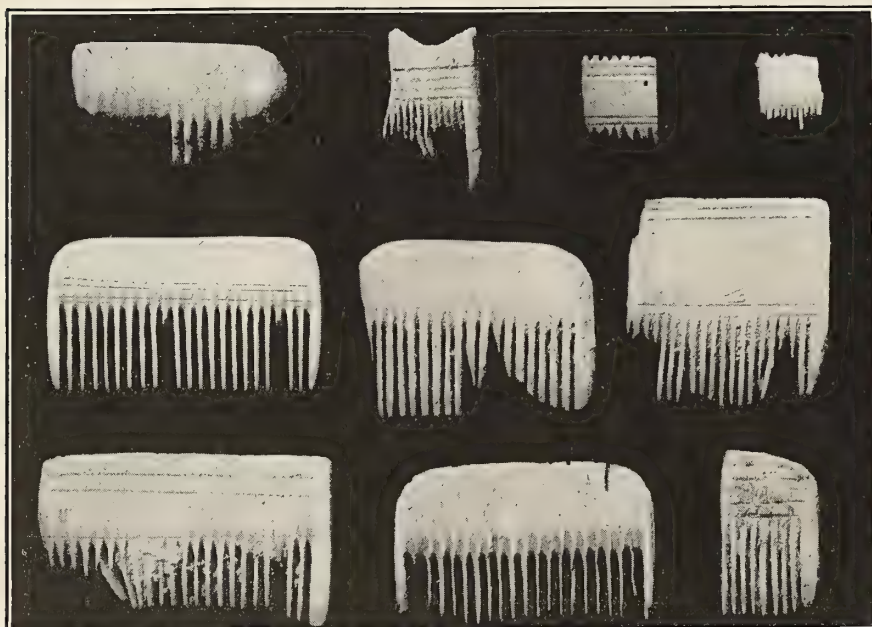
balata, gutta-percha, and chicle are prepared. The best-known timber of the family is the bullet-wood of the Guianas or the "massaranduba" of the Amazon. The argan is usually a low tree, but the trunk is sometimes very thick, diameters as great as eight feet being reported. It is probable that this wood served the Egyptians for many useful purposes where strength was the important factor, as, for example, in chariot wheels and furniture.

A yoke for some small animal was made of alder wood with the bark intact. The alders are shrubs or low trees common along watercourses everywhere. The wood is fairly strong, but usually is obtainable in sizes too small or irregular for extensive use except for fuel and charcoal. In a region where better timber is scarce, it would serve very well for tool handles and small implements. It is interesting to note that there is an alder growing in the Pacific Coast region of the United States that is a timber tree and the lumber is employed for much the same purposes as birch.

species, and some cultivated trees. For more important uses they brought in, often from long distances, timbers of comparatively light weight, such as cedar, cypress, and Sebestan plum, for employment where large sizes were demanded, while the heavier timbers were limited to uses re-



MILADY'S COSMETIC BOX OF 1580 B. C.



THE TRESSES OF A PHARAOH'S DAUGHTER WERE DRESSED WITH COMBS OF WOOD

Although no boxwood (*Buxus*) was discovered in the collection studied, it was probably used by the early Egyptians for carving and for the manufacture of many small objects, such as combs. The tree called "teasshur" by the Hebrews is common in northern and western Asia, northern Africa, and central and southern Europe, and, though of small proportions, its wood has always been prized for carving. It is still an article of commerce and no satisfactory substitute has ever been found for it in wood engraving.

In general, it may be said that the Egyptians employed such local growth as was available, but this was apparently limited to tamarisk, alder, other minor

quiring strength, or hardness, or fineness of texture. There were skilled woodworkers, cabinet-makers, and woodcarvers in those days. A mural picture in the tomb of Rekmara at Thebes, dating from the reign of Thothmes III, shows the craftsmen at work, and some authorities have interpreted a part of this scene as representing veneering. It is known that veneering was practiced by the Egyptians at least as early as Dynasty XII, some 4,000 years ago. An admirable example of it is shown in a particularly fine coffin of that period, the coffin of the monarch's daughter, Nephthys,



MUTE RELICS OF HUMAN ACTIVITIES 2,000 YEARS AGO

from Meir, exhibited in the Ninth Egyptian room of the Metropolitan Museum. In this room, also, are parts of the veneered coffin of Senebtisi (Dynasty XII) from the Museum's excavation at Lisht. Our makers of veneered furniture, who for years were rather apologetic of their product, have come to assume a different attitude since their discovery that a supposedly ultra-modern practice is of venerable antiquity!

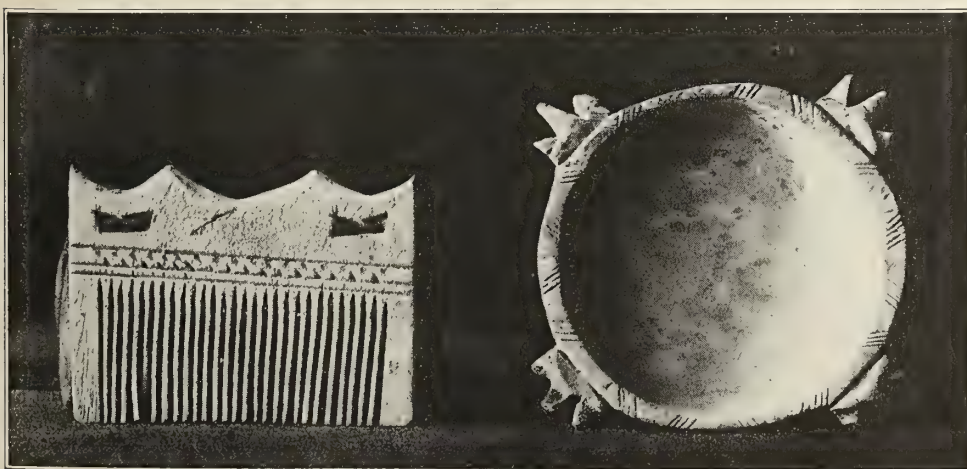
There is no evidence that the woods that have endured the centuries needed any preservative treatment other than that provided by the dry climate. Wood does not contain within itself the elements of decay, and while changes may be brought about through the processes of oxidation, real decay is due to the attacks of low forms of plant life, chiefly fungi. These plants require for their existence substantially the same things as higher forms of the vegetable kingdom, with the exception of light. A plant that makes its own food derives the energy from sunlight; but a fungus is a consumer, not a producer, of food, and shuns the light; it must have moisture, however, though enough of this may be obtained from humid and stagnant air. The test of durability comes only where wood is exposed to conditions favorable to decay. Thus the sycamore, which would have rotted away in a year in the Nile mud, is sound after 30 centuries in a desert tomb, while the yew of vastly greater durability crumbled to dust because it was less advantageously located.

But how are these ancient woods identified? The most obvious method of determining an unknown material is to compare it with known specimens until agreement is reached. In the case of fragments discolored by time and perhaps more or less completely rotted, no dependence can be placed on superficial appearance. One must have recourse to thin-sections for study under the compound microscope. This, too, is a method of comparison, a case of trial and error; but the trained investigator uses many short cuts to reduce the field of possibilities. He seeks the unusual or what Poe's Dupin calls the *outré* character of the features, the deviations from the plane of the ordinary. To cite an instance in point:



Courtesy the United States National Museum

THE EGYPTIAN CASKETS WERE BUILT UP OF MANY SMALL PIECES OF WOOD NEATLY JOINED WITH WOODEN PEGS



ORNATE WOODEN COMB AND BOWL IN EXCELLENT PRESERVATION AFTER 30 CENTURIES

A bit of a coffin was so rotten that outwardly it had lost all semblance to wood. When, after proper treatment, thin slices were cut with a razor and magnified, it was seen that the original structure persisted. The absence of pores or vessels determined at once its status as a conifer, and the absence of resin cells eliminated the cedar woods and narrowed the choice. Most important of all, within each fiber was a spiral band, a feature so unusual that the answer was clear at once; the wood was yew



THE HARP THAT ONCE THROUGH PHARAOH'S HALLS

(*Taxus*). Or take the case of the cedar (*Cedrus*). In every wood the cells communicate with each other through little thin spots in the wall, called pits. In the coniferous woods these pits are said to be bordered, because they show an inner circle or ellipse within a larger one. In *Cedrus* this inner circle is scalloped in such a peculiar way that all other features might be eliminated without affecting the certainty of identification.

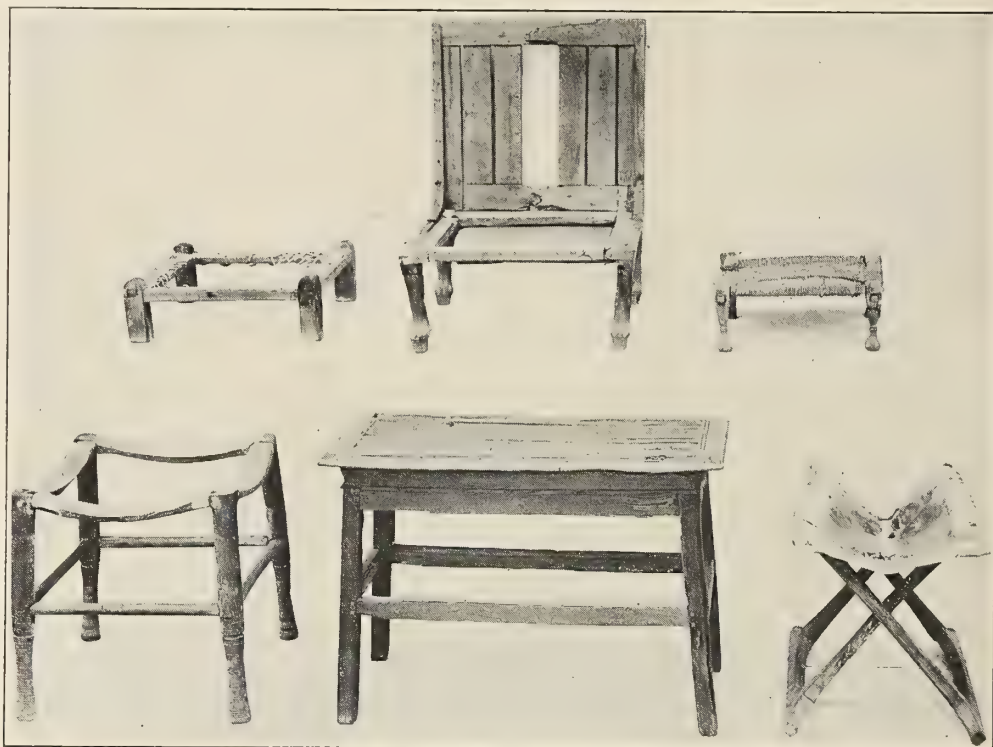
But this leaves out of consideration the possibility of evolutionary changes. The written history of man is encompassed within a few thousand years; and we are wont to attach an undue importance to that period of time, forgetful of the fact that evolution is concerned with millions of years. There are individual trees living today that were flourishing when the children of Israel were in the bondage of the Egyptians, the old wood of the core sound and perfectly preserved and varying in no essential detail from that most recently

produced. The tamarisk peg from the coffin of Ibsen-hotep was found to be substantially identical in structure with the wood of a tamarisk bush growing in the Yale Botanical Garden in New Haven, Connecticut. A lapse of 40 centuries and growth under alien skies thousands of miles from its native soil apparently had wrought no fundamental changes.

The photograph of a mummy and casket shown on page 483, is reproduced through the courtesy of the United States National Museum.

The casket, built up of small pieces of wood neatly joined, indicates a scarcity of larger trunks for the purpose of making coffins. After the wood was joined and held in place with wooden pegs, it was hewn off in the form of a statue of the deceased. The casket is in two parts, joined, after the body was placed therein, by dowels of wood.

The Egyptians conceived man as consisting of at least three parts—the body, the soul, and the *Ka*—i. e., the double, or genius. The *Ka* was supposed to remain in existence after death, and to be the representative of the human personality. In order that the *Ka* might take possession of the body when it pleased, the body had to be preserved from decay. The preservation of the body was accordingly the chief end of every Egyptian who wished everlasting life. To this end the Egyptians mummified their bodies, built indestructible tombs, inscribed the tombs and coffins with magical formulæ to repel the attacks of the demons, and placed statues, household goods, food, statuettes of servants, etc., that the tomb might resemble as much as possible the old home of the deceased.



EGYPTIAN FURNITURE IN USE 2000-1400 B. C.

Surrounded by Forest Fires

My Most Exciting Experience as a Forest Ranger

BY E. C. PULASKI

Winner of the First Prize in the Ranger Story Contest

DURING the summer of 1910 forest fires were everywhere in the Cœur d'Alene Mountains of northern Idaho. For weeks there had been no rain and the woods were drier than I had ever seen them. The intense heat of the sun, combined with strong winds which sprang up during the day, served to scatter the fires in all directions. Crews of several hundred men were working twenty-four hours a day throughout the mountains, endeavoring to hold back the fires.

The Supervisor of the Cœur d'Alene National Forest, whose headquarters were in Wallace, Idaho, had detailed me to go from one fire camp to another to direct the men in the battle against the flames, and to see that the packers properly distributed supplies. Although we worked day and night and did everything that could be done to control the fires, little headway was made because of the dryness of the forest and those strong winds.

On August 20 a terrific hurricane broke over the mountains. It picked up the fires and carried them for miles. The wind was so strong that it almost lifted men out of their saddles, and the canyons seemed to act as chimneys, through which the wind and fires swept with the roar of a thousand freight trains. The smoke and heat became so intense that it was difficult to breathe. The men who were packing in supplies refused to go through to their destinations, dumped their loads, and fled back to Wallace. Thou-

sands of dollars' worth of blankets and supplies were thus lost.

That afternoon the wind swept the mountains in circles and joined the fires. The whole world seemed to us men back in those mountains to be aflame. Many thought that it really was the end of the world. Under such conditions, it would have been worse than foolhardy to attempt to fight the fires. It was a case of saving our

lives. I got on my horse and went where I could, gathering men. Most of them were unfamiliar with the country, and I knew that if they ever got out they would have to be led out; but those that I got together were so panic-stricken it was very difficult to make them understand what I wanted them to do. Added to that, it had become very dark, although it was but little after mid-day.

I finally collected forty-five men. My voice was almost gone from trying to call above the noise of the fire and wind, but I finally succeeded in making them understand that if they would seize blankets from the camp stocks and do just as I told

them, there was a chance of our saving our lives; otherwise they would be burned to death. Trees were falling all about us under the strain of the fires and heavy winds, and it was almost impossible to see through the smoky darkness. Had it not been for my familiarity with the mountain trails, we would never have come out alive, for we were completely surrounded by raging, whipping fire.



WE WERE COMPLETELY SURROUNDED BY RAGING, WHIPPING FIRE

My one hope was to reach an old mine tunnel which I knew to be not far from us. We raced for it. On the way one man was killed by a falling tree. We reached the mine just in time, for we were hardly in when the fire swept over our trail. I ordered the men to lie face down upon the ground of the tunnel and not dare to sit up



A MONUMENT TO BRAVERY

During the holocaust of 1910 many lives were lost, and in recognition of some of those unsung heroes who, burned and smoke-scarred, battled and choked out their lives on the far-flung fire-line, the Forest Service raised this rugged monument. Suitable headstones with bronze tablets were erected over as many of these "heroes of peace" as could be traced, for they died as truly in the service of their country as did those on Flanders' poppy-covered fields.

unless they wanted to suffocate, for the tunnel was filling with fire gas and smoke. One man tried to make a rush outside, which would have meant certain death. I drew my revolver and said,

"The first man who tries to leave this tunnel I will shoot."

I did not have to use my gun.

Two horses were in the tunnel with us. The horse I was riding I had given to an old man who could not keep up with us in the race to the tunnel. I often wonder what happened to the bear that came down that fiery trail with us and insisted on getting in our way. But at the time I gave no thought to bear or horses. Outside the tunnel the canyon was a raging furnace. The mine timbers caught fire, so I stood at the entrance and hung wet blankets over the opening, trying to keep the flames back by filling my hat with water, which fortunately was in the mine, and throwing it on the burning timbers.

The men were in a panic of fear, some crying, some praying. Many of them soon became unconscious from the terrible heat, smoke, and fire gas. The wet blankets actually caught fire and I had to replace them with others soaked in water. But I, too, finally sank down unconscious. I do not know how long I was in this condition, but it must have been for hours. I remember hearing a man say, "Come outside, boys, the boss is dead." I replied, "Like hell he is." I raised myself up and felt fresh air circulating through the mine. The men were becoming conscious. It was 5 o'clock in the morning.

We tried to stand up, but our legs refused to hold us; so we dragged ourselves outside to the creek to ease our parched throats and lips. Our disappointment was terrible when we found the stream filled with ashes and the water too warm to drink. We counted our number. Five were missing. Some of the men went back and tried to awaken them, but they were dead. As the air outside became clearer, we gained strength, and finally were able to stagger to our feet and start toward Wallace. We had to make our way over burning logs and through smoking debris. When walking failed us, we crawled on hands and knees.

How we got down I hardly know. We were in a terrible condition, all of us hurt or burned. I was blind and my hands were burned from trying to keep the fire out of the mine. Our shoes were burned off our feet and our clothing was in parched rags. We were covered with mud and ashes. Some time during the morning a rescue party met us. These men had had a hard time themselves and were in a very poor condition to help us. Later, as we dragged our way down through Placer Creek, we were met by some women from Wallace. They had hot coffee and whiskey, and although we appreciated the kindness of those brave women, we could take nothing but cold water.

We finally reached Wallace and were put in the different hospitals. Those who had died were later brought out on pack-horses. Part of Wallace had burned in that same fire, so when my injuries were dressed I insisted upon going to my home, to make sure that my wife and little daughter were all right. I got a man to lead me, for the world was black to my eyes; but when I found my home and family safe, they sent me back to the hospital, where I stayed for nearly two months with blindness and pneumonia. My experience left me with poor eyes, weak lungs, and throat; but, thank God, I am not now blind.

Good Shooting for All

What the Federal Public Shooting Grounds and Game Refuge Bill Will Mean to Our Wild Fowl and to the Hunter of Moderate Means

BY WILLIAM C. ADAMS

Director, Massachusetts Division of Fisheries and Game

WHAT is happening to our game birds and the good shooting which our fathers and forefathers enjoyed? Do you know? Do you care? Mr. Adams' article is the first of an illuminating series by prominent game conservationists on this very subject, and on what must be done to stop the needless destruction of our wild fowl, and to offset the concentration of the remaining good shooting grounds into the hands of the rich men's clubs. Announcement of the full series appears on page 495 of this number of "American Forestry."



YOUR reaction to the above title, if you are a gunner, will be very strong. If you are an old hand at the game, you will recall the days when wild fowl were so plentiful that you never dreamed they could be reduced to present numbers and you will long to see those conditions restored. If you are young at the game, you will recall the legends. You will think of the Elysian

Fields and the Happy Hunting Grounds and create a mental picture of a region densely populated with shore birds and wild fowl, with yourself located somewhere in the center, in a blind with some decoys, a good supply of ammunition, and a reliable gun, panting, "Let's Go!"

The real shock to your nervous system will be the realization that today for the rank and file of gunners no



Courtesy National Association of Audubon Societies

MALLARDS ON LAKE WINNIPEGOSIS, MANITOBA

Wild-fowl shooting is rapidly becoming a rich man's game, because practically every good shooting area in the country today is swiftly passing into the control of some individual or club. The man of moderate means is thus left the long shots, "few and far between."

such thing exists, and you will feel a little bitter. Against whom? Perhaps against your dad, and your granddad, and your great-granddad, as well as those relatives of a lot of friends of yours, and other residents of the United States, because they killed to their hearts' content without ever thinking much about you. You are justified in this feeling for the reason that man, and man alone, is responsible for the destruction of the wild life of this country, though he may try to pass the buck to various other causes.

Be all that as it may, the above title is a delusion and a snare, if you are to take it seriously under the existing state of affairs. The fact that your forebears slaughtered without rhyme or reason, that some others drained many of your valuable lakes and swamp areas in the hope of obtaining some rich lands cheap (which, by the way, has been a mighty costly experiment in many instances), and that some of your contemporaries are rendering vast stretches of water, shore, and marsh shambles of the deadliest sort by oil and other pollution, is enough to test the most ardent optimist who may be thinking on this very question of "good shooting for all."

The logic of the situation is fairly simple. Man had good shooting once; man has, broadly speaking, placed it beyond his reach for the time being or forever, depending on his present attitude. But that which man has destroyed he can restore, providing he is willing to pay the penalties for his violation of the laws of nature.

The foregoing sounds academic,

whereas your average citizen wants to shoot low and put it over quick. To him the answer is: Combine with the other gunners to cause the federal and state governments to acquire land and water areas suitable for public shooting grounds, sanctuaries where the birds may rest on

migrations, and breeding grounds. Federal and state authorities, national, state, and local gunning clubs, and individual gunners combined to present to the last Congress the so-called Public Shooting Ground-Game Refuge Bill.

In brief, it provided for a license at a cost of one dollar, to be paid by all gunners wishing to hunt migratory birds. Approximately one-half of the proceeds was to enable the Biological Survey of the United States Department of Agriculture, which has the drafting and enforcement of the rules and regulations growing out of the treaty between the United States and Canada for the

protection of migratory birds, better to protect, and thus increase the supply of wild fowl. The other half would be expended in acquiring waters and lands for the establishment of public shooting grounds, permanent sanctuaries, and breeding grounds for migratory water-fowl.

No wild-fowl gunner today questions the benefits

which have already come from the protection given under the treaty. Shore birds and wild fowl (to say nothing of song and insectivorous birds) are on the increase in practically every part of the country. But, so far as the average gunner is concerned (and by that expression I mean the



A HORNED GREBE ON ITS NEST

When marsh areas are drained the breeding grounds of great numbers of wild fowl are destroyed. This photograph was taken in Alberta, Canada, and shows a mother bird hatching out its young.



A BLIND

Where the eager hunter crouches and, with a bountiful supply of ammunition and a reliable gun, awaits the flight that starts his sport. This is a substantial and comfortable type of blind, constructed by a Maryland gun club.

every-day chap, who has to hustle to get together his gun and shells and a few decoys, and cannot afford to belong to clubs and travel long distances to get into choice country, or "the one-gallus gunner," as my friend, Mr. Hart, of Virginia, describes him), it all sounds fine, but it really does not mean an awful lot in his young life. This for the simple reason that practically every good wild-fowl shooting area in this country today is under the control of some individual or club, or is rapidly becoming so, so that the man of moderate means has a very limited opportunity to indulge in his sport, and at best has very lean pickings. If present tendencies are allowed to continue unchecked, wild-fowl shooting will rapidly become a rich man's game, or at least a sport which can be enjoyed only by those who are financially able to pay well for the privilege.

THE SPORTSMAN'S OPPORTUNITY

Why should the Public Shooting Grounds-Game Refuge Bill

the Federal Government substantial funds, less than half of which would go to the Survey to help carry on its work of protecting and increasing the supply of migratory birds. The remainder would be available to purchase the refuges and shooting areas mentioned. The money from the first-mentioned share would enable the



A FAMILY OF DOWNY YOUNG GOLDEN-EYES

Swamp areas of the kind here shown are the breeding grounds of numerous waterfowl and the Public Shooting Ground-Game Refuge Bill would preserve many such areas for bird propagation and seasonal hunting.



WHERE MANY BIRDS SUMMER

Carpenter Lake, in the Turtle Mountains of Nebraska, supplies summer homes, where redheads, canvas backs, golden-eyes, and many other kinds of waterfowl raise their young. Destruction of the marsh lands is seriously restricting the breeding grounds of our waterfowl.

appeal strongly to the "one-gallus gunner"? For the simple reason that it offers him his one best opportunity to insure to himself and his children the opportunity to indulge in his favorite sport. There isn't anything mysterious or difficult to understand about the project. In fact, it is very simple. Figure it out for yourself. If every man who wishes to hunt wild fowl would buy a dollar license next fall, it would place in the hands of

Bureau to take care of its rapidly increasing business and to carry on the thousand and one investigations which are constantly required in order to have reliable information on which to base rules and regulations.

For example, one season the fishermen of the Atlantic coast of Massachusetts and on the Pacific coast of Washington complain that certain sea ducks are ruining the shell fisheries. Again, other fishermen complain of damage by the pelicans and other water birds. Again, gunners on inland waters complain of the killing of young ducks by gulls. Again, great losses of wild fowl occur, such as those in the marshes around Salt Lake. Again, injuries to crops by

ducks and geese are reported in other sections. And so on through a long list of problems bearing on the welfare of wild fowl. The breeding habits of these birds call for careful study, as do the migrations of the many species.

The foregoing merely touches the surface of the vast field of study and investigation which must be covered before we will have the matter well in hand. The mat-

[Continued on page 501]

Forest People

THIS column is devoted to stories about real men and women who are doing original, interesting, and worthwhile things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell readers of AMERICAN FORESTRY about them. Manuscripts should not exceed 700 or 800 words, and, if acceptable, will be paid for.

"The Wise Fool" of Unicoi County

BY GORDON D. MARCKWORTH

TWENTY years ago neighbors said that W. J. Williamson, of Unicoi County, Tennessee, was "gittin' almighty queer."

"That fool Williamson," they said in so many words, "really thinks that if we keep fire out of this logged-over land all about us, we will soon have young forests pushing right up to our back doors."

The neighbors smiled and shook their heads, but Mr. Williamson stuck by his theory and continued to watch with canny eyes the behavior of forest land between the time it is rent and torn by the scars of lumbering and blackened by the flames of hand-set fires. The more he studied the more firmly he stuck by his theory.

In 1905, having the opportunity to buy a tract of land that had recently been cut over, he decided to put his theory into practice. He bought approximately three hundred and twenty acres of "worthless" cut-over land. This tract was located on the east slope of Rich Mountain, in Unicoi County.

When he moved on to his new property he found himself the possessor of a huge fire-trap. Some of the land had been burned over, but a large part still contained the tops and logs left by recent logging operations. Everywhere the people believed in burning the woods, and they put their belief into practice whenever the opportunity presented itself.

At first Mr. Williamson tried to keep fire out of only a small part of his holdings, for trying to keep it out of the entire tract seemed almost a hopeless task. He

selected an area that seemed the easiest to protect and watched it zealously during the spring and fall fire seasons. The result of his protection soon began to show, for all over the protected area the young trees were

coming in fast. This encouraged him so that he set to work to keep fire out of the entire three hundred and twenty acres.

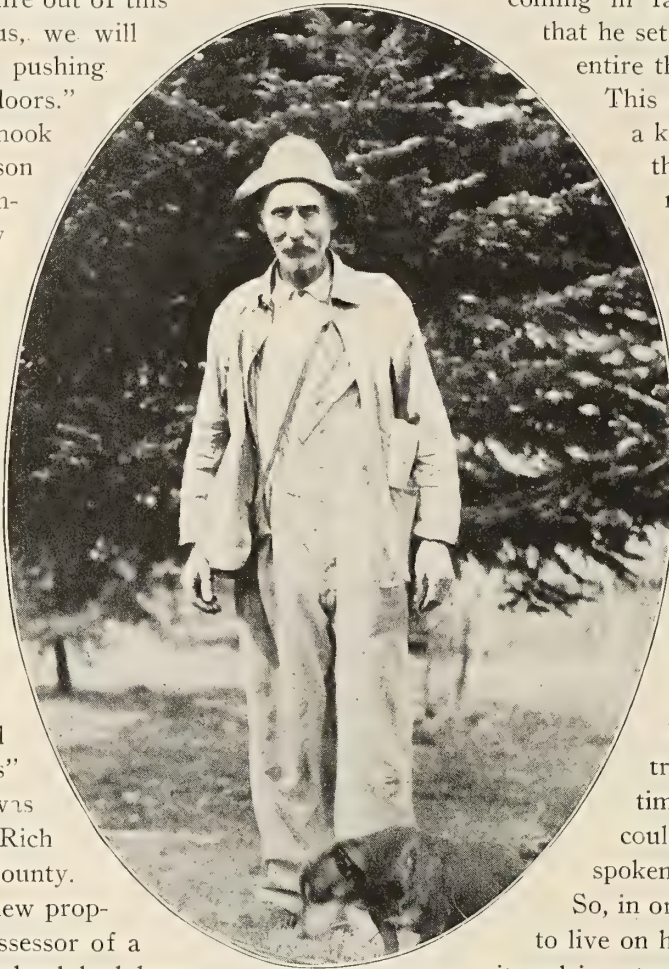
This meant eternal vigilance and a keen knowledge of every foot of the ground, and of the best methods and places of attacking his fires. From a relatively small front, his operations had now expanded to a fire-line in the neighborhood of four miles long.

Four miles of fire-line is not so bad when you can get plenty of help, but when you have to figure on handling it by yourself, it is an entirely different proposition. In the early days it was particularly hard to get help, for the people thought that nobody but a fool or crazy man would try to keep out fires and grow timber. They all said that it couldn't be done, and he was often spoken of as "that fool Williamson."

So, in order to get help, he got a family to live on his place and farm a portion of it and in return they fought fire whenever he called on them.

With this help, and such other that he could get from time to time, he has kept fire out of his holdings. On several occasions it has burned over the line in a few places, but the evidence of his success as a whole is seen by the logs that are still on the ground and by the unscarred stumps of the original stand.

Today Mr. Williamson is in possession of as fine a

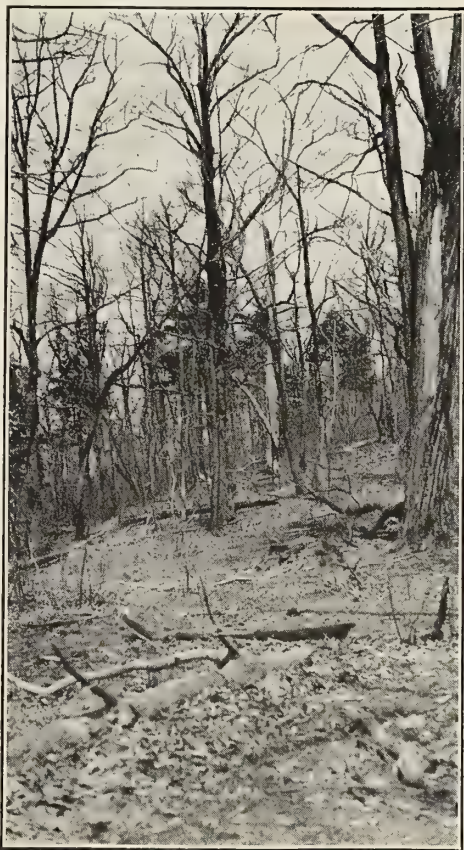


W. J. WILLIAMSON,
"THE WISE FOOL"

stand of young timber as can be found anywhere in east Tennessee. Chestnut is, perhaps, his most abundant tree. Recently a buyer for one of the telephone companies tried to buy some poles from him, but he said, "I haven't any to sell right now, but if you will come back in twenty years I'll have plenty for you." The buyer assured him that if he was still in the game he would be right on hand twenty years hence. This particular buyer and Mr. Williamson together estimated that in twenty years there will be 200,000 telephone poles ready to be cut, which will be worth at least one dollar each on the stump at that time.

Next to chestnut comes locust, which will be ready for the market in a few years and which will yield several thousand posts. Linn and poplar are found in abundance on the richer slopes and along the streams, while on an old field and scattered through the tract are about forty acres of fine young white pine. Oaks, hickory, and maple are also found throughout the area.

After eighteen years of watchful waiting and fighting, Mr. Williamson is more enthusiastic than ever. "If I could start over again, I would cut down all the old cull trees that were left standing," he said. "These trees just take up a lot of room, and when they fall down they mash down a lot of young trees, and, besides, they make it a heap harder to fight fire. I have about seventy-five or a hundred acres of virgin timber still standing, and when I cut that I'm going to cut down every cull tree on it, even if I have to let it lie after it is down. The young trees will grow thicker and faster if I do this," he added.



TYPICAL OF WHAT HE FOUND—BADLY SCARRED AND DAMAGED TREES, AN OPEN FIRE TRAP

He further showed his enthusiasm by stating that he was going to plant white pine on an old field he was no longer using. "It would seed in itself," he stated, "but it will come back a whole lot faster if I plant it now."

When asked how long he thought it would take to grow a crop of timber, he said: "Well, if you take locust, you can get a crop of fence posts in ten or fifteen years, and your linn and poplar will make paper-wood every twenty years, and oak will make ties in

forty years; but, as a matter of fact, after you once get going you don't have to wait, for there is always something you can be cutting while you are waiting for your saw-logs to grow."

"Growing timber is the easiest way I know of to make money," he stated. "All you have to do is to keep fires out and your bank account grows every year. Recently some men tried to buy this place from me and they offered me five times as much for it as I paid eighteen years ago, but I just told them that it wasn't for sale."



AND THE RESULT OF HIS ETERNAL VIGILANCE, WORK, AND CARE

Although the people around him are learning the value of fire prevention and are more careful with fires, he still realizes that his old enemy, fire, is stalking close at hand, ready to wipe out the fruits of his labor at the earliest opportunity. He is now taking greater precautions than ever and is always on the lookout for fire. Trails and fire-lines are beginning to appear crossing his holdings, and whenever he has the time he is extending them.

Today his young stands of timber are pointed to with pride by those who formerly ridiculed him, and he is no longer looked upon as crazy or pointed out as "The Fool of Unicoi County."

Today his young stands of timber are pointed to with pride by those who formerly ridiculed him, and he is no longer looked upon as crazy or pointed out as "The Fool of Unicoi County."

The Bird Doctor of the Rocky Mountains

By JACK F. LAWSON

"DOCTOR, why can't you make this poor bird well of its broken wing, as you do the broken arms of little boys and girls?"

This question, coming from a little tot holding a crippled bird in her hand, altered the life of Dr. W. W. Arnold and eventually made him known throughout the United States as the "Bird Doctor of the Rocky Mountains." Although Dr. Arnold just recently died, the work which he started in behalf of our birds is going forward on a larger scale than he ever dreamed of, and the bird hospital which he established at Colorado Springs and which has sheltered thousands of injured and mutilated members of the bird family is to continue.

His work is being taken up enthusiastically by the Arnold Nature Club of Colorado Springs, an organization of thousands of school children, their teachers and parents. This organization has been formed in memory of the man who possibly has done more to help wounded birds in the United States, in recent years, than has any other one person. Men and women of this club devote hours of their time to the relief of suffering bird-life. Their efforts are along lines laid down by Dr. Arnold during his lifetime and which produced such wonderful results in repairing broken limbs and giving back vitality to birds that had suffered mishap.

How Dr. Arnold became interested in establishing a hospital exclusively for birds may best be told in his own words, written shortly before he died (and which he requested be incorporated in this article):

"The disasters that were constantly maiming and in-

capacitating my feathered friends from the performance of their God-given functions in protecting man's necessary food supplies were noted sadly, but that I could be instrumental in caring for and restoring them to their world's work did not flash across my path until about ten or twelve years ago.

"I was enjoying the beauty of a balmy morning in springtime when the first migratory wave of bird life was sweeping northward, leaving in its trail many unfortunates with broken wings, the cruel toll taken by the telephone and telegraph wires obstructing the right of way of the aerial voyagers. Noting the unusually large number of victims, the wish was born in my own heart that I might reach out a succoring hand to the unfortunates; and just then a winsome lassie came to me with a bird with a broken wing, and, handing the frightened creature to me, exclaimed:

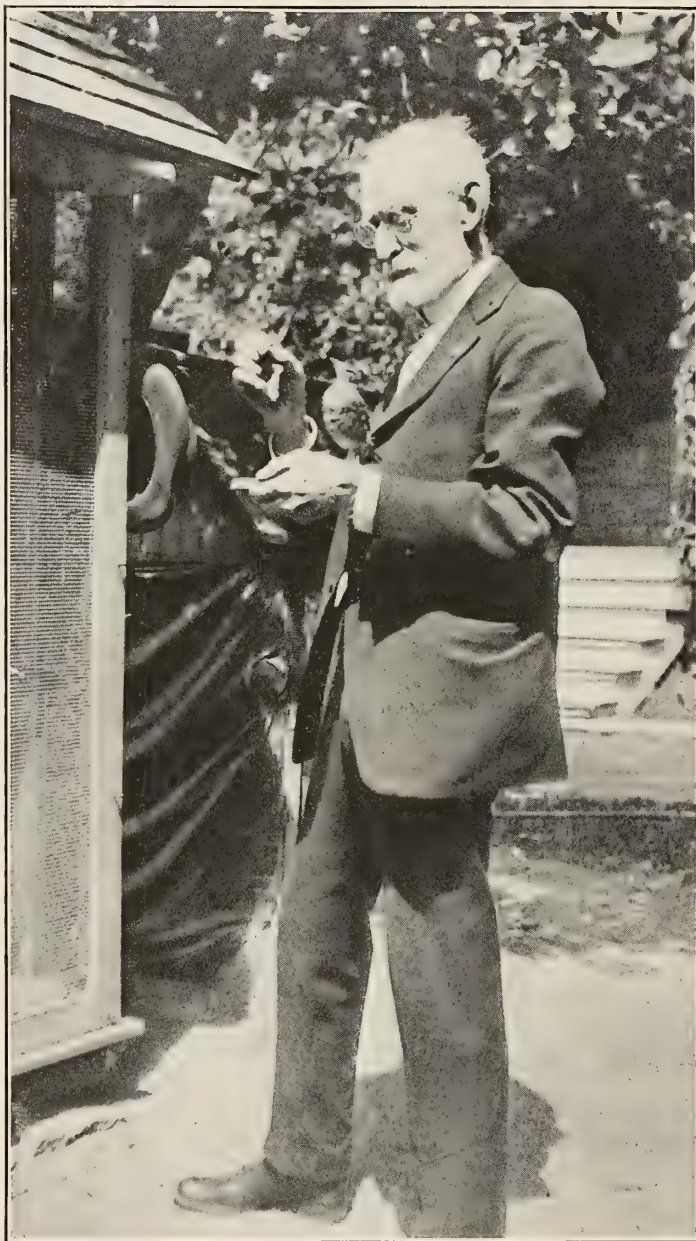
"Doctor, why can't you make this poor bird well of its broken wing, as you do the broken arms of the little boys and girls?"

With the answer to the child's question came the inspiration.

Since that eventful day thousands of school children of Colorado Springs have filled their lives with joy by making frequent pilgrimages to Dr. Arnold's bird hospital, bearing in their hands crippled birds, which, after a few weeks' time in the hospital, were able to care for themselves

and were given their liberty.

"In a very brief time after establishing the bird hospital I discovered that inadvertently a door into a new world had been opened to me and I was possessed of a 'hobby' which would keep life's blood stream young and



DR. W. W. ARNOLD

At his hospital at Colorado Springs for ailing and injured birds. The bird on his hand is an orphan baby robin, which he is feeding.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

Conservation and Development

DURING July the eyes of the nation have been on Alaska. President Harding and three of his Cabinet members have held them there. It has been a month of great hope and great expectation for far-away Alaska. Development is the star to which many Alaskans hitch their wagons. In its name many who are not true Alaskans would rob Alaska and the nation which owns it.

Much speculation is being made as to the result of the President's visit. Will he indeed find, as has been charged, that Alaska is helpless, bound hand and foot by unbreakable red tape, which strangles development? We think not, at least so far as the handling of Alaska's National Forests is concerned. Before leaving for Alaska Secretary of Agriculture Henry C. Wallace said: "I want to find out all about the bureaucratic red tape of which we have heard so much. If there is anywhere in Alaska, or this side of there, even one man who can show me how the administration of the Department of Agriculture or any bureau of that department is doing injustice to Alaska or Alaska's industries, he is the man I want to see. . . ."

"So far as the administration of the forests is concerned, there is absolutely no difference between our ad-

ministration in Alaska and our administration in the various states. . . . In 1906, the year immediately following the transfer of the forests to the Department of Agriculture, 86 per cent of the lumber requirement of Alaska was imported and 14 per cent cut from the National Forests. By 1919 these percentages were reversed, and 86 per cent of the local requirements was cut from the National Forests and but 14 per cent imported. The normal cut is now about 45,000,000 feet."

Almost a million dollars' worth of timber has been cut on the Alaskan National Forests, of which one-fourth was paid into the Territorial Road and School Fund. As Secretary Wallace declares, there is no locking up of the timber resources of Alaska, but quite the contrary. Our Alaskan forests are being used in a far-sighted way which will assure their perpetuation and at the same time return a profit to the public. This is true development.

Be not misled by the term "development." It is often used loosely with purpose. Wolves, masked in sheep's clothing, parade in its name. "Developing Alaska" by letting down the bars to conscienceless concession-seekers will not develop Alaska; neither will it give the people of the United States cheaper lumber, paper, coal, or oil.

The Farmer's Third

ONE-THIRD of the forest-growing lands of the United States is at the farmer's back door. In ten-, twenty-, oftentimes one-hundred-acre tracts and more, they form part and parcel of practically every farm unit of the nation. In the aggregate they embrace 168 million acres, an area equivalent to one-third the total improved farm land in the United States. Here is soil sufficient to form a mighty empire, soil with vitality to grow one of the most needed crops of the nation—wood.

What are the agricultural colleges of the country doing about this portion of the American farmers' farm? For the most part, they are ignoring it. Ignoring the fact that in many sections the wood-producing section of the farm touches the very foundation of agriculture and rural industrial prosperity. They are ignoring the fact that these forests and potential forests are located right at hand, where their products are most needed; ignoring the fact that, unlike other farm crops, timber prices during the last forty years have moved consistently and in-

evitably upward; ignoring the fact that today farmers are not suffering from low prices for their wood products, but in many localities are actually being saved from bankruptcy by their woodlots.

Today the farm woodlands are not rendering a service comparable to what is easily possible. This is due in large measure to ignorance on the part of the farmer, an ignorance which is not being adequately dispelled. The fire hazard, inequitable systems of timber taxation, lack of information about a quarter of the farm area of the United States, continue, and the agricultural colleges continue either to ignore the problem or consider forestry as a side issue.

With enlightening instruction and leadership, the farmer can protect his woodlot. He can change confiscatory taxation of timber to equitable taxation. He can grow forest crops according to sound and improved methods. When will the agricultural colleges see their opportunities and shoulder this obligation?

A Tree for a Tree

ZANE GREY is a lover of the woods and the out-of-doors. In his inspiring appreciation of trees, which appears in this number of AMERICAN FORESTRY, under the simple title "TREES," he expresses the fear—one that is in many minds—that America's virgin forests to the last tree will be sacrificed to the almighty dollar. He recognizes that it is right for forests to be utilized for lumber, paper, and the hundreds of other wood products. But must all of our old forests go into the maw of commercialism?

Two men enter a forest which it has taken centuries to build. One exclaims, "It would be a national crime to ever cut this forest!" The other exclaims, "What a waste! These trees are mature; they should be cut. They will build homes for ten thousand people." And the first man replies, "Ah, my friend, this forest, if not cut, will build health and character for one hundred times ten thousand people in years to come!"

Both men are right. We need homes, we need health, and, above all, we Americans need character. We need the character to meet on common ground, weigh our national forest needs sanely, and make provision for our social as well as our material wants. That the god of commercialism is leading us in a mad race toward the

ultimate destruction of all of our old forests, majestic with the age of centuries, is a revolting thought—revolting because it is unnecessary and the race is so fast.

Out of an original heritage of almost a billion acres of virgin forests, we ought to keep some of those old forests intact for the common good they will do. Body-building and character-building are quite as important as home-building. A relatively few acres of health-giving forests will serve thousands of people year after year for all time.

Zane Grey would require the man who cuts a tree to plant a tree. Carried out literally, that would not be practicable, because in so many of our forests there is already sufficient young growth which, if protected, would provide a continuing forest much sooner and much cheaper than by planting. That is his thought, we believe—continuing forests by the means most certain and feasible. If, as a nation, we followed this policy and the policy of reforesting our several hundred million acres of barren and near-barren cut-over lands, we could yet reserve some of our old virgin forests for the beneficial enjoyment of future generations without depriving the god who rules our wood markets.

Disturbing News from the North

THE American paper and pulp industry is aroused by what loom as impending events north of the Canadian line. Canada is talking seriously about placing an export tax upon pulpwood cut from freehold lands in that country. It is doing more than talking. The House of Commons has just passed a resolution giving the government authority to make regulations prohibiting the export of pulp logs. For some years the exportation of pulpwood cut from crown lands of Quebec, Ontario, and New Brunswick has been prohibited, and the action now proposed would serve in large measure to stop the flow of all pulpwood from Canada to the pulp mills in the United States.

There is good cause for the industries in this country to be concerned over the action proposed by the northern reports. One-third of the pulpwood used in the United States to supply our homes with news and other paper comes from Canada. Our pulp and paper industry is largely centered in New England, where Maine leads production, with New York a close second. New York would be hardest hit of any state by the stoppage of pulpwood from Canada, because the mills of this state get some 60 per cent of their raw wood from Canadian forests. Practically all other of our northern states use Canadian pulpwood in varying degrees.

Considering the dependency of American pulp mills upon Canadian timber and the dependency of American citizens upon the products of the pulp mills, Canada's move to check the exportation of pulpwood is indeed a serious problem. We cannot dodge the seriousness of such a contingency. Canada is awake to the value of its forests and to the need of conserving them to its best interests. A complete embargo upon the exportation of pulpwood from Canada is certain to come sooner or later, and possibly, in view of recent events, much sooner than Americans had anticipated. We must prepare to meet the impending shortage.

What is the best way to meet it? We do not know. America has no inventory of its pulpwood supplies and possibilities. Scurrying around at the last moment, endeavoring to ascertain just what we have, where it is located, how best to adjust our industry in order to utilize it and to prepare for the more distant future, is apt to lead to costly blunders and disrupted industry. We need a first-class authentic inventory of our pulpwood situation if we are to direct development along sound lines. It will cost money, but in the long run it will be cheap—cheap for the industry, cheap for the publishers, and cheap for the public.

Business or Politics?

ARTHUR L. DAVIS is no longer Director of the Reclamation Service. By a few strokes of the pen, both he and his position have been wiped out by Secretary Work. With a few added strokes of the pen, Secretary Work has created the position of Commissioner of Reclamation, and appointed D. W. Davis, Ex-Governor of Idaho, to the position. According to the press announcements from the Secretary's office, this action is in the interests of better business.

The announcement at once brought widespread protests from the engineers of the country and from a multitude of friends of the Reclamation Service who are familiar with Mr. Arthur L. Davis' forty years of long, efficient, and devoted public service. It brought consternation to those who believe that efficiency in the scientific and technical bureaus of the government depends upon this work being free from politics and manned by trained men of technical knowledge and experience. They believe the Secretary of the Interior has struck a deep blow at this basic principle.

Secretary Work has apparently reversed a policy inaugurated by President Roosevelt and continued by his successors. He has not only removed a distinguished engineer from the Directorship of the Reclamation Service, but he has changed the title of the position to make it conform to those positions to which men without technical qualifications are commonly appointed. And, out of hand he has named for the position a man from political life. Secretary Work has a right to make a

change if he deems this to the public interest, but if abandonment of the established principles of professionally trained appointees for important technical positions of this character can be accomplished by the mere assertion that it is in the public interest, then what is to prevent similar action on the same asserted grounds in other cases where technical or professional qualifications are of first importance?

In the absence of any convincing explanation from the Secretary's office, *AMERICAN FORESTRY*, which views the reclamation work very closely related to forestry, is forced to the conviction that Secretary Work has set a very questionable precedent. The public will watch with close scrutiny the results actually accomplished by the change, and will view with great concern any further action which bears the stamp of departing from such an important and well-recognized principle. This criticism conveys no reflections upon Ex-Governor Davis, the new appointee. The great problem of efficiency in the government, and particularly those bureaus charged with the administration of our natural resources, is not one of arrangement of bureaus and titles, or of the final adjustment of irregularities of compensation. The big question is to attract to the public service specially trained men of ability and high standing in the professions involved. Secretary Work's action, we believe, will have the reverse effect upon the big engineers of the country, and upon professionally trained men in general.

Wild Fowl with "Good Shooting for All"

BY WILLIAM C. ADAMS

AMERICAN FORESTRY begins in this number a timely series of articles, dealing with what is happening to our wild fowl and the need of the early passage of Federal legislation providing for Public Shooting Grounds and Game Refuges. Game conservation has yet far to go if good fowl shooting in America is not to pass into history. Every hunter, game lover, and out-of-doors man should be accurately informed in order that he may do his part wisely, promptly, and effectively.

Read these articles. The complete series will include:

"GOOD SHOOTING FOR ALL," by William C. Adams, Director, Massachusetts Division of Fisheries and Game. What the Public Shooting Grounds and Game Refuge legislation seeks to accomplish and what its results will

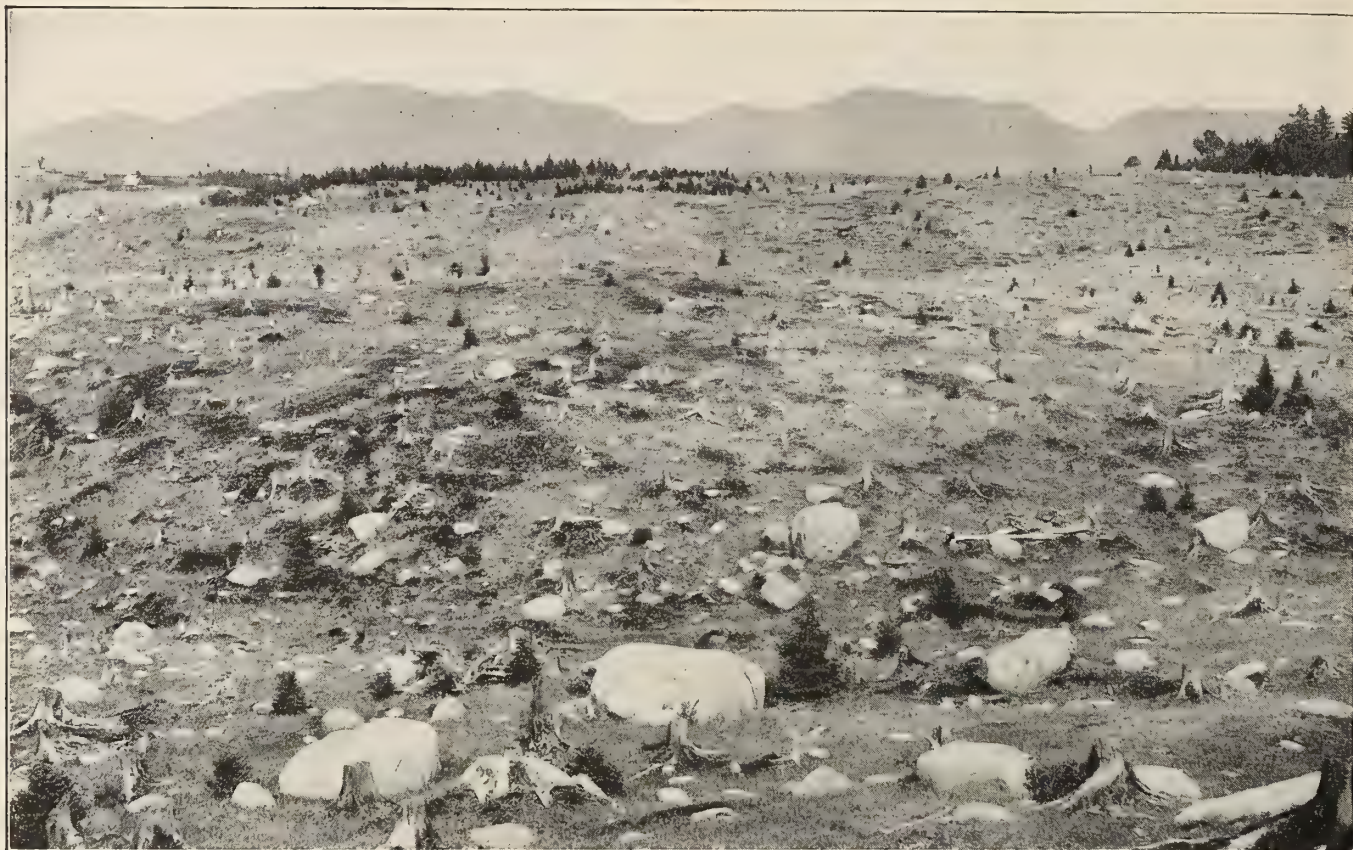
mean to game conservation and to the hunter of moderate means.

"IN BEHALF OF OUR WATER FOWL," by Carlos Avery, Commissioner of Game and Fish, of Minnesota. A plea for action to stop the heedless and needless destruction of the breeding and homing grounds of our water fowl.

"THE DESTRUCTION OF WILD FOWL IN THE WEST," by Major Allan Brooks, Museum of Vertebrate Zoology, Berkeley, California. What is happening to bird life in California and the arid West following the drainage of extensive marsh and water areas by development companies.

"FEDERAL AID FOR OUR WILD LIFE," by Judge Lee Miles, Little Rock, Arkansas. Why the Federal Government must be looked to for leadership in the establishment of public shooting grounds and game refuges.

THESE ARTICLES WILL APPEAR MONTHLY IN THE ORDER GIVEN



(New York State Conservation Commission)

ONE REASON WHY 75 PER CENT OF NEW YORK'S LUMBER, NOW NEEDED FOR HOME BUILDING AND MANUFACTURE, IS IMPORTED FROM CANADA, THE SOUTH, AND THE WEST. THERE ARE EIGHT MILLION ACRES OF FOREST LAND IN THE STATE, WHICH IF DEVOTED TO TIMBER-GROWING WOULD IN TIME ELIMINATE A PRESENT GROWING FREIGHT CHARGE OF \$15 TO \$20 A THOUSAND FEET



(Photograph by A. B. Brooks)

A FINE EXAMPLE OF THE SPLENDID EFFORTS OF NEW YORK TO REHABILITATE HER FORESTS AND KEEP A PERPETUAL SUPPLY OF YOUNG TREES AVAILABLE IS SEEN IN THIS CLOSE-UP OF A SECTION OF THE GREAT SARATOGA NURSERY. THERE ARE FIVE THOUSAND TWO-YEAR OLD SEEDLINGS TO A BED, SHOWING THRIFTY GROWTH

Two States Fight Forest Devastation

By E. WHEELER WHITMORE

FIGURATIVELY speaking, New York City has enough timber land in its back yard to supply its annual lumber requirements. In the two states of New York and New Jersey there are, in round figures, about 15,000,000 acres classified as forest land. At present the remaining timber stands in these states are being heavily cut into, although the Conservation Commissions are doing splendid work along lines making for a reforestation movement.

Reflection of local conditions is particularly felt by home-builders, because large quantities of lumber used in

New York City for the past twenty years, "I paid on an average of \$20 for a thousand board feet of lumber. To-day I pay on an average of \$60 for a thousand board feet of the same material. I attribute the difference in lumber costs mainly to the fact that nearly 90 per cent of the lumber I use today is hauled by railroads from the South or West." Eliminate the freight bill, this builder contends, and building costs in the metropolitan district can be substantially reduced.

Not only have building costs been affected by the distance between the forest and the consumer, but the pulp industry in New York State has also had to import about 55 per cent of its yearly requirements from Canada, paying on an average of \$25.01 a cord f. o. b. at the mill against \$14.57 for Minnesota, where no wood is imported; and at the present rate of consumption the pulp-wood supply on private lands in the Adirondack region will be exhausted in about eight years.



(New York State Conservation Commission)

ONE HUNDRED YEARS AGO THESE WHITE PINES WERE PLANTED ON THE PROPERTY OF GEORGE PROSSER AT YAPHANK, LONG ISLAND, NEW YORK. THE RESULT SPEAKS FOR ITSELF

New York and New Jersey must be hauled across the continent. Thus a lumber freight bill of about \$50,000,000 annually is contracted. In other words, 65 per cent of the lumber used in erecting homes in New Jersey is transported by railroads from Washington or Oregon, or from Mississippi or Florida, while 75 per cent of New York State's lumber requirements comes from Canada, the South, or the West.

This additional cost in home construction becomes evident when a comparison is made between the lumber costs of 1912 and today. "Ten or twelve years ago," said a builder who has been erecting homes in the vicinity of



A YOUNG PINE FOREST IN NEW JERSEY, TYPICAL OF THE GROWTH WHICH CAN BE OBTAINED ON MUCH OF THE STATE'S 1,200,000 ACRES OF NOW NON-PRODUCING FOREST LANDS

Sometimes a word to the wise is sufficient; but of late the wise either have not been listening or have become deaf. At least this might be intimated from the fact that in New York State there are 8,000,000 acres that from the forester's point of view could be made productive woodland, while in New Jersey there are 1,200,000 acres out of the 2,000,000 acres classified as forest land that contain



(New York State Conservation Commission)

WHAT BESIDES THE WOODMAN'S AX HAS DEPLETED THE FORESTS OF NEW YORK AND NEW JERSEY? DROP A MATCH OR A GLOWING CIGARETTE HERE AND YOU WILL HAVE YOUR ANSWER; ALSO YOU WILL HAVE TO TELL IT TO THE JUDGE

no merchantable timber. These facts, if read, should surely arouse the wise, and they should in loud and sonorous tones be urging that those lands, which are largely privately owned, be reforested. If those 9,200,000 acres were productive today, the wood-consuming industries in New York and New Jersey would be assured a perpetual supply of lumber at a price that would be from \$15 to \$20 a thousand board feet lower than the western yield.

Now, one of the most logical questions to ask would be: What besides the woodman's ax has depleted our timber stands in New York and New Jersey? And one of the first replies would be—the crimson, scorching and consuming forest fire. The New Jersey Conservation Commission frankly admits this. After making a thorough survey of the state, the commission reports that nearly 70 per cent of the state's forested area "has recently been cut over, or so severely burned that the present growth, while potentially valuable, is now too small to be merchantable." In fact, forest fires during recent years cost the citizens of New Jersey something like \$70,000,000 a year.

On the other hand, the Conservation Commission in New York State reports that the average forest fire during 1922 did not extend over an average area of more than 28 acres. This, it cannot be denied, is certainly a splendid record.

To alleviate present forest conditions, New York State is standing behind the idea of *education*. So the camper or hunter finds large signs in the forest, which remind him that half-smoked cigars, cigarettes, and simmering camp-fires are the sparks from which large and destructive forest fires originate. As an added precaution, the Conservation Commission has dotted the state with fire-lookout towers, and the result of the fire warden's eagle eye, as he scrutinizes the surrounding terrain from his tower, has already become apparent in the Empire State.

To educate the public has always been a problem. This may be attributed to the fact that many people believe that forestry has something to do with esthetics. Many have read about forests in poetry and prose; hence their perception of forestry is formed. But the owner of timberland should know better. As a matter of fact, many owners of timberlands, particularly the owner of the farm woodlot, do not understand the proper method of cutting, thinning, or selection of trees to be taken or left upon their land. Trees may be cut, if tree management is applied, in such a way that a greater net return may be had throughout successive years and generations.

So, after giving the subject of education deliberative consideration, the New York Conservation Commission has hit upon a mode of procedure which is not exactly



THE CRIMSON RAMBLER OF NEW JERSEY'S FORESTS. DURING RECENT YEARS, FOREST FIRES HAVE CAUSED THE STATE A LOSS OF ALMOST SEVENTY MILLION DOLLARS A YEAR

original, but which has been patterned after a plan that the Farm Bureau has found to be most effective. The plan, bluntly stated, is: The entire state is to be mapped into forest districts; each district is to be placed under the supervision of a trained forester, employed by the state. He is to call the people of the various towns and cities together, as he covers his district, and explain to them the necessity of proper management of woodlands. This forester will also give practical advice, to any who seek it, regarding the trees that are best suited to be grown on any individual's woodlot. The forester in each district will, furthermore, supervise the planting of trees and see that they are properly cared for after they have been planted. This advice and service will cost the people of the Empire State absolutely nothing, for the Conservation Commission regards a perpetual forest crop as the state's most important crop.

As a matter of fact, New York State authorities do not foster legislation that will force woodland owners to comply with certain statutory acts that might be passed by the state legislature. They, however, believe that education will remedy the present indifference thus far evidenced by the people. In fact, the zoning of the state into forest districts is a big step toward that goal.

At present New York State has an estimated stand of merchantable timber totaling about 26,000,000,000 board

feet, compared with an original stand of 150,000,000,000 board feet. The lumber industry began in this state about three hundred years ago, when three sawmills were erected by the Dutch West India Company at New Amsterdam. In 1639 other mills were erected at Fort Orange, now the City of Albany. The first ship to carry a cargo of lumber from New York State was the *Arms of Amsterdam*, which left New Amsterdam for Holland in the spring of 1626. Until 1830 the lumber industry, as far as the Empire State is concerned, was confined to the valleys of the Mohawk and Hudson Rivers. The Erie Canal and Hudson River were then the main arteries upon which rafts of lumber and logs were floated to the forest market. By 1850 Albany was the largest lumber market in the world, handling as much as 700,000,000 board feet in a single year. In 1850 New York ranked first in lumber production, furnishing about 20 per cent of the nation's annual cut. Today, however, New York produces but 1 per cent of the nation's yield, or 432,632,000 board feet.

Recent surveys of the State of New York give 40 per cent and of New Jersey fully 50 per cent of the land area as possible of classification as forest land. Furthermore, these lands are within a short hauling distance of the largest lumber-consuming center in the world; and should not common sense guide the owner of property primarily suitable for producing timber to invest in a product that



(New York State Conservation Commission)

AMONG THE STATES, NEW YORK IS A LEADER IN REFORESTATION. THESE SCOTCH PINES, PLANTED BY THE STATE IN 1905, IN FRANKLIN COUNTY, GRAPHICALLY ILLUSTRATE WHAT THE STATE CONSERVATION COMMISSION IS DOING TO DEMONSTRATE THE POSSIBILITIES OF FOREST-BUILDING

is and will be constantly in demand? Still, the fact remains that there is very little individual effort made for replacement of the tree-supply after it has been cut. As it is, the forests of the two states are being exploited without regard for the future. Shortly the future will be raising a mighty cry, a lamentation that will be pitiful to hear, and that will seem to say that that rich and bountiful heritage, once the backbone of our nation, has been consumed, has been destroyed, while the past sat idly by and complacently watched its dissipation.

"Because there is still an abundance of timber in the far West, the East and central West cannot complacently see the basis of their own industrial prosperity destroyed," Colonel Henry S. Graves warned the American Lumber Congress. And no states are more concerned with the forest problem than New York and New Jersey, for the wood-consuming industries within their borders use about 7,000,000,000 board feet of lumber each year.

Six Rules for Prevention of Fires

1. **MATCHES.**—Be sure your match is out. Break it in two before you throw it away.

2. **TOBACCO.**—Throw pipe ashes and cigar or cigarette stumps in the dust of the road and stamp or pinch out the fire before leaving them. Don't throw them into brush, leaves, or needles.

3. **MAKING CAMP.**—Build a small camp fire. Build it in the open, not against a tree or log or near brush. Scrape away the trash from around it.

4. **LEAVING CAMP.**—Never leave a camp fire, even for a short time, without quenching it with water and earth.

5. **BONFIRES.**—Never build bonfires in windy weather or where there is the slightest danger of their escaping from control. Don't make them larger than you need.

6. **FIGHTING FIRES.**—If you find a fire, try to put it out. If you can't, get word of it to the nearest U. S. Forest Ranger or State Fire Warden at once. Keep in touch with the rangers.

PREVENT FOREST FIRES—IT PAYS.

Forest People

[Continued from page 492]

sweet, defying arteriosclerosis and senility for many a long day," Dr. Arnold wrote shortly before his death from pneumonia.

"With some seven thousand school children as coadjutants, the work of gathering in the feathered patients was 'child's play' indeed and the happiest moments of their lives."

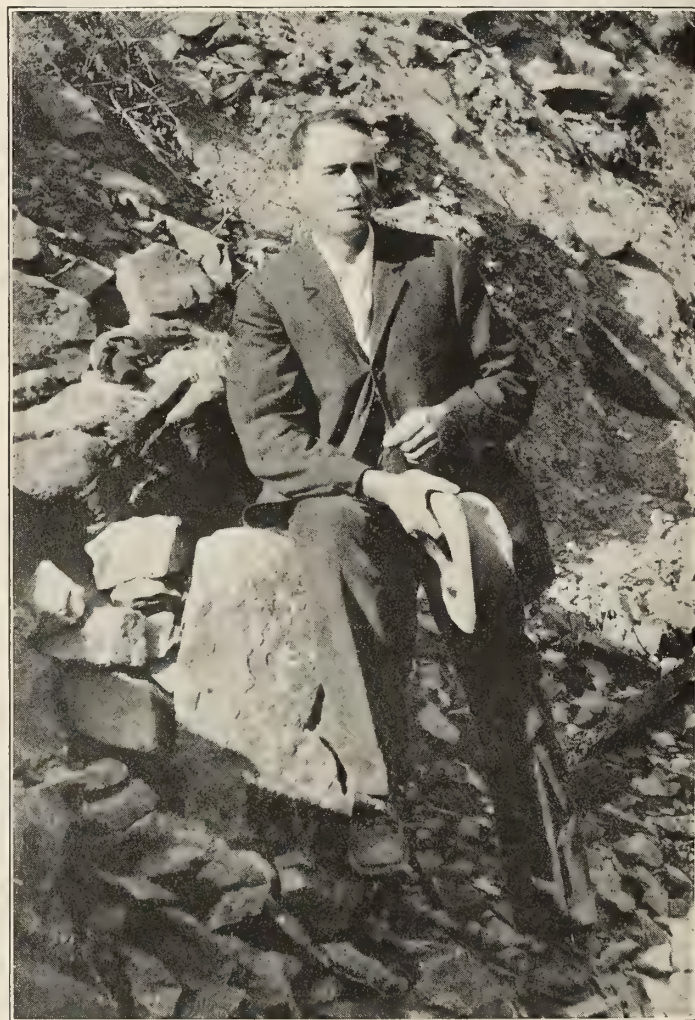
Dr. Arnold's plan for crystallizing the sentiment of bird protection in the hearts of the children by making them co-partners in his hospital work, and thus indirectly reaching the parents and adult classes, has proved so eminently successful that it is being perpetuated by the Arnold Nature Club. In addition to the hospital work among the injured birds of the Pikes Peak region, the Club will institute courses of scientific study and research work for improving conditions among the birds.

The unfortunate feathered patients upon their first introduction to the hospital almost perish with terror, but with an intuition exceedingly keen they soon comprehend the situation and accept it. In four or five days the patients recognize their caretaker and partake of food prepared for them, no longer endeavoring to escape.

The hospital plant today consists of one large aviary partitioned into two compartments; another, but smaller, one; a first-help ward; an orphanage; quarters for the birds almost well; a beauty parlor, two private wards for special use, and a nursery.

No migratory birds are turned out during the winter, but recovered birds are given their freedom any time during the summer months. When released, the birds are taken to the outskirts of the city, for they have become so unafraid of human beings and predatory animals that they are apt to fall easy victims.

The preparation of the food and feeding of a miscellaneous bunch of birds requires a great deal of time and painstaking attention, for the health of the patients depends very largely upon the food, water, and sanitary condition of their quarters. The daily menu as prepared by Dr. Arnold includes scraped or ground raw meat, insects, earth worms and bugs; meal worm dessert; millet, hemp, sunflower, and various weed seeds; various kinds of sweet berries, cherries, grapes, apples, and other fruits. Vegetables also play an important part in the daily menu.



FOREST RANGER E. C. PULASKI, WINNER OF THE FIRST PRIZE IN AMERICAN FORESTRY'S RANGER STORY CONTEST

In his story Ranger Pulaski tells simply of what has gone down in the annals of the forest as an act of outstanding heroism—the leading of his men, or rather, the driving of them for their own safety—into the mouth of an abandoned mine tunnel, out of an inferno of raging fire which surrounded them.

Good Shooting for All

[Continued from page 487]

ter of permits of various kinds authorizing the taking of migratory birds for propagating and other laudable purposes has assumed vast proportions and is rapidly growing. The expenditure of a considerable sum for such work annually would yield a splendid return. From this first allotment named would also be maintained the warden service of from 200 to 300 men for the entire United States and Alaska.

In view of the fact that Massachusetts has 30 fish and game wardens and New York from 140 to 160, it is evident the number available for the entire country from the Federal licenses will still be limited, so each man will have a great area to patrol. To expect 200 or 300 men to do the job throughout the United States is to call for the utmost service such a force can render. The Biological Survey, operating under the enabling act, has put into effect rules and regulations which have brought about the increase in wild fowl and other migratory birds mentioned above, even with its present inadequate warden force. The more rigid enforcement of these same rules and regulations made possible by the added funds from the Federal licenses will result in even greater benefits.

HOW WILD FOWL WOULD BE PROTECTED

When it comes to the second part of the income, to be used in the acquisition of game refuges, breeding grounds, and public shooting grounds, we are ready to paint the bright lights into the picture. It would not be difficult in any state for the government to select areas which are good shooting grounds in the fall or winter and which would likewise be attractive breeding areas to local birds in the proper season. A certain part of such tract would be marked off as a permanent bird sanctuary, within which birds would be safe at all times. The rest of the area would be thrown open to public shooting, subject to reasonable ground rules, such as, for example, prohibiting shooting in the afternoon and evening, or limiting the shooting to three days a week, or to a modest bag limit for a starter, etc., the shooters on a given day to be limited to a reasonable number, and on the basis of first come, first served, or by application to a resident superintendent during the shooting season.

But the whole plan would be laid out on common-sense lines based on local conditions, all done with the single purpose of gradually increasing opportunities for sport among the people who cannot afford membership in hunting clubs. There would be little competition from the wealthy class of sportsmen, who would undoubtedly go to their clubs and private preserves, thus leaving the field to the local gunner of small means. During the closed season, which would include the breeding season, all these areas would be bird sanctuaries. A fight would be inaugurated on such areas against all kinds of vermin, and during the breeding season a limited amount of arti-

ficial propagation might be undertaken at a small cost, which would greatly increase the supply of wild fowl. In some instances tracts could be acquired for their value as breeding areas only, for it is just as essential to the gunner to have producing areas where large numbers of birds will be raised as it is to have other areas open to public shooting where these same birds may be shot.

EARLY ACTION NECESSARY

The bill further provides that all lands chosen by the Federal Government for these purposes shall be only with the consent of the legislature of the state in which the property lies. This secures to every state a controlling hand in the transaction. The bill further provides that in all these areas taken as migratory-bird refuges or public shooting grounds commercial fishermen may fish subject to the laws of the state wherein the area is located. The agricultural element has nothing to fear from this bill, for it is entirely unlikely that any of the lands desired would be more valuable for agricultural purposes. The owners of valuable shooting-club grounds have nothing to fear, for the reason that the value of these privileges is such as to be prohibitive when it comes to expending the comparatively small sums available, while the bill carries no authority to take over lands except by purchase with the consent of the state legislature.

There are still left in all parts of the country suitable areas which may be acquired at a reasonable price, provided they are taken up within a reasonable time. It is well-nigh impossible to formulate any plan which will apply with equal force to all sections of our country. In some states, such as those east of the Mississippi and north of the Mason and Dixon line, very little valuable wild-fowl shooting grounds are left to the public. In some of the other states opportunities still exist, but are growing fewer every year. In some of the larger states of the west, extensive sections are still open; but even here the cream of the shooting has largely been taken by clubs. The time is now ripe for some of these latter states to profit by what they can easily discover to be the situation in some of the eastern and northeastern states, and to make certain for all time that they and coming generations will not be so restricted in their hunting grounds. Once let one of these public shooting grounds, game sanctuaries, and breeding grounds be established in a given state, the benefits accruing will be so evident and the example so encouraging that it is safe to say the sportsmen of the states will insist on others being established by the action of state governments, either directly or in co-operation with the Federal Government.

"NO HUNTING ALLOWED! KEEP OFF!"

The question of posted land is beginning to be a nightmare to the average hunter, and as the population in-

creases it will become more so. The leasing of shooting privileges and the establishment of private preserves are in their infancy, but the Old World arrangements of this kind are rapidly taking hold in certain portions of this country and will increase rather than diminish. The land-owner is beginning to realize that the shooting privileges on his land are an asset from which he can derive an income and he is looking more and more to new sources of revenue. All lands are becoming increasingly valuable, and the longer action is deferred the less our dollar will purchase.

It should come home to the sportsmen of this country that here is the first real movement ever started to provide for them public shooting grounds in the full sense of the term, and likewise those breeding areas which are so essential to the increase of the game. There is a real incentive for him to get to work to make converts to the cause, and there is a real incentive to pay his dollar. He knows now that for the first time in all the history of sport the foundation is being laid to secure to him and to those who come after him, for all time, an opportunity to go afield. The proposition is simple and business-like. It is surrounded with all the safeguards necessary to protect the interests of all concerned. Unless and until the sportsmen of the country concentrate on some such business-like method of preserving their recreation, the so-called wealthy element will gradually absorb all of the

suitable water and land, while the "one-gallus gunner," who can easily pay his dollar now and hereafter, will be left on the side lines, a victim of his own shortsightedness, indifference, and neglect.

In the beginning of this article he is pictured as bitterly reflecting on the wastefulness, indifference, and neglect of his forefathers. Here is the opportunity for him to set about the return of the old order of things, so far as it is now possible. From a purely selfish standpoint, he will now get out and hustle, for he has something definite and tangible to work upon which will give him what he wants. From the larger view of pure sportsmanship he will see here an opportunity to discharge his obligations to future generations and will do for them those things which his predecessors neglected to do for him, while insuring opportunity for his own sport.

Get behind the Public Shooting Ground-Game Refuge Bill for the coming session of Congress. Write your Senator and Congressman that you are in favor of this measure and wish it passed. Get every gunner and bird-lover you know to do the same thing. Do not just read this article and calmly lay it aside. *Get action*, for this means the salvation of your sport. There is nothing else now on foot, or likely to arise in the next hundred years, which means or will mean so much to you and to other hunters and lovers of out-of-door life.

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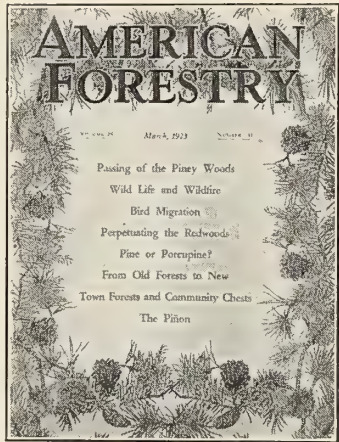
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This is the only Popular National Magazine devoted to trees and forests and the use of wood.
August, 1923.



Reproduction from a painting in oil, by Frank Swift Chase, of the estate of L. F. Lorce, at West Orange, N. J.

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What is real Tree Surgery?

TREE surgery that *saves* trees—real Tree Surgery—is vastly more than a matter of mechanics, of cement and iron. As in dentistry, mechanical skill is of the highest importance, but it must be based on an intimate knowledge of the anatomy and physiology of tree life. Trees cannot be “repaired” as carpenters repair houses.

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An American Visitor at Kew

[Continued from page 470]

scape scheme. The great palm house is made to serve as an adequate background for a beautiful lagoon on one side and a delightful Italian garden on the other. The smaller houses have been no less successfully treated.

There are a number of botanical museums at Kew which are abundantly worth visiting, if one can draw oneself away from the beauty of the grounds and the wonders of the greenhouses. There are in all four of these museums. They are designed to illustrate the use of all the important economic plants of the British Empire. They contain wonderful series of specimens and photographs showing the products and the methods of carrying on all the important plant industries, such as those of the production of tea, coffee, cotton, rubber, and the like. One of these museums is given over entirely to a collection of woods from all the important timber trees of the British Empire. Another is devoted entirely to the subject of forestry in the British Isles. Among the interesting exhibits in this building are specimens and photographs showing the growth of some of our American trees when used in forest plantations in Great Britain.

In conclusion we cannot do better than to urge the American visitor to London to follow the advice of the poet, Alfred Noyes, and "Come down to Kew in lilac time, in lilac time." If his holiday schedule will not permit him to make the pilgrimage when the lilacs are in bloom, he should make it whenever he best can. For it is worth a visit at any time of year or state of weather.

WATER-POWER LEGISLATION IN PENNSYLVANIA

Governor Pinchot's program of power legislation for Pennsylvania was completed by the passage of the general power bill and the companion condemnation bill on the last day of the legislative session. It included the preparation of sound and far-seeing plans for the future as well as provision for present needs.

Most significant for the future is the Act of May 24, creating a Giant Power Survey Board consisting of the Governor, Attorney General, Secretary of Forests and Waters, Chairman of the Public Service Commission, Secretary of Agriculture, Secretary of Labor and Industry, State Geologist, a Deputy Attorney General, and an Engineer to be appointed by the Governor. This board is to make an outline survey of the power resources available for the supply of Pennsylvania's needs, and will recommend a policy to be embodied in legislation by the General Assembly convening in January, 1925. The end in view is the most efficient development of the State's great fuel-power resources,

supplemented by water power, the pouring of the general output of these fuel- and water-power resources into a common reservoir of interconnected transmission lines covering the northeastern states, and the service of the industries, farms, and homes of Pennsylvania from this common reservoir. The possibilities and advantages of locating giant power plants at the coal mines, saving the by-products of coal now wasted in fuel-power plants, electrifying railroads, and co-ordinating flood prevention and stream purification, so far as practicable, with water-power development, are to be investigated.

Two other acts embodied in the legislation authorize the Department of Forests and Waters to lease State forest lands for power projects for periods not to exceed fifty years and to grant easements on State forest lands for water-supply projects without limit of time.

A reprint of an article by Ernest H. Wilson, entitled "Northern Trees in Southern Lands," from the Journal of the Arnold Arboretum, is just out, the demand for which is readily appreciated. The article deals, in a very interesting and illuminating way, with the introduction of northern trees in southern hemispheres. The world-wide shortage and consequent high price of timber emphasizes the necessity for the cultivation of exotic trees for practical forestry purposes, as the demand is con-

stant and general for quick-growing trees which will yield useful timber. The author recently made a tour through Australia and South Africa, during which he made intensive study of this subject, and upon his return prepared the article of which the reprint has been made. In his conclusion the author touches also upon "Southern Trees in Northern Lands," not that the growth of these trees contributes much of economic value, because of unfavorable climatic and soil conditions, with the exception of the eucalyptus of Australasia, which the author aptly calls "the southern hemisphere's great gift to forestry," but from a standpoint of general interest and information.

NEW YORK BREAKS PLANTING RECORD

New York has broken all previous records in reforestation this season by planting on its waste land areas all the trees which its nurseries could supply. More than seven million trees were planted in the state this spring, and it is predicted that the fall planting season will swell the number to twelve million. Municipal forestry is an adopted principle in the State and is now under way in more than thirty municipalities. County and school district forests are springing up rapidly and the youth of our state are being instructed in the way which leads eventually to perpetual supplies of timber.



BOY SCOUTS ENTHUSIASTIC TREE PLANTERS

Members of the Kennett Square Troop have been actively planting on an estate near Unionville, Pennsylvania, writes Mr. C. H. Thomas, having set out between 3,000 and 4,000 rock oak and elm trees this spring. The young trees are about a foot tall and the Scouts simply used a small pick to make the hole in which to sink them. The trees were donated by the State of Pennsylvania through the Forestry Commissioner and transportation charges were paid for by the Rod and Gun Club of Coatesville, Pennsylvania. The Troop is under the command of P. Robert Schmaltz and deserves great commendation for its tree planting activities.



The loading platform at one of the Weyerhaeuser mills. It is such up-to-date facilities as this that enable this group of mills to give efficient handling to orders of any size.



The unit package shed at one of the Weyerhaeuser distributing yards from which emergency shipments can be made on twenty-four hours' notice—an important feature of modern lumber service.

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WHEN an old, established lumber organization finds its sales to industrial users increase threefold in a few years, there must be sound fundamental reasons for the growth that are of interest to all wood-using industrial concerns.

Several years ago the Weyerhaeuser organization made a comprehensive survey of the lumber needs of American industries. The results of this survey, coupled with more than sixty years' experience in the lumber business, led to a definite service policy in meeting industrial lumber requirements.

This service has two basic factors:

FIRST—to find the kind and type of lumber and the grade of lumber that will meet a manufacturer's requirements most efficiently and economically.

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SUCH a dependable lumber service enables a manufacturer definitely to standardize his lumber practices and factory operation. Continuous production is assured. There is no unnecessary wastage. Handling costs are reduced. In short, the manufacturer is relieved of his lumber worries. The expert in lumber works with his experts to produce maximum results.

Weyerhaeuser sales to industrial users have shown phenomenal increases because Weyerhaeuser service fills a real need—because con-

cerns who have utilized the service find that it pays.

This high type of lumber service is made possible because of the timber resources, specialized equipment and highly trained personnel of the Weyerhaeuser organization:

A large supply of mature timber of fifteen different species, and many types within these species, sufficient for decades of cutting.

Scores of logging camps guaranteeing a steady stream of suitable raw material.

Fifteen complete modern manufacturing units.

Seasoning processes that prepare lumber scientifically for each exacting need.

A crew of men at all the plants, with years of experience in producing, grading and shipping Weyerhaeuser quality lumber.

A corps of salesmen trained to think as purchasing agents and buyers have wished for lumber sellers to think.

Distributing facilities backed by fifteen immense mill stocks and two great strategically located storage plants, in the heart of both the eastern and mid-western markets.

THE Weyerhaeuser Sales Company distributes Weyerhaeuser Forest Products through the established trade channels. Its principal office is in Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 2694 University Ave., St. Paul; and with representatives throughout the country.

The personal service of Weyerhaeuser crating engineers in helping buyers of crating lumber to reduce their packing and shipping costs is outlined in a booklet, "Better Crating," sent free on request.

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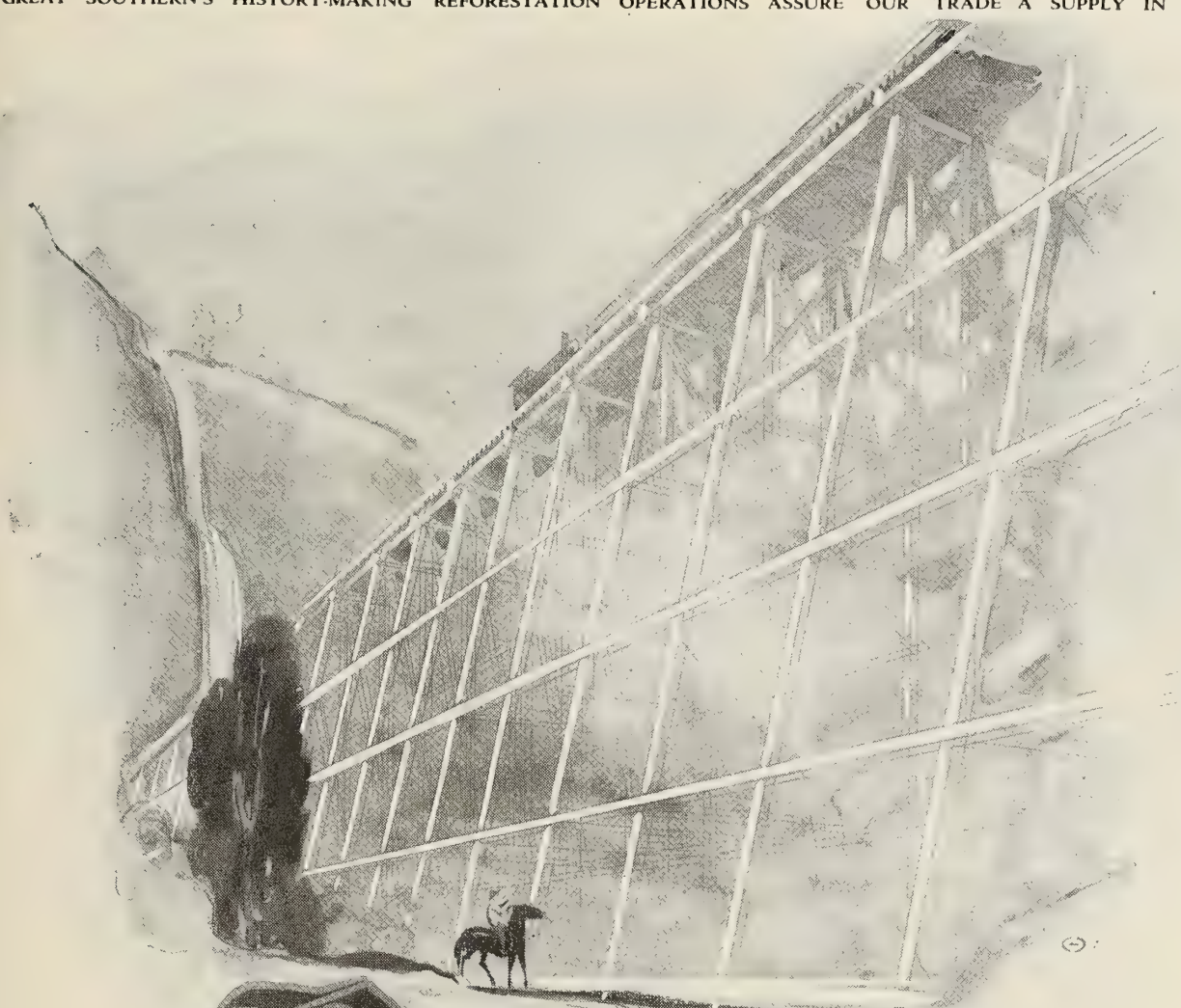
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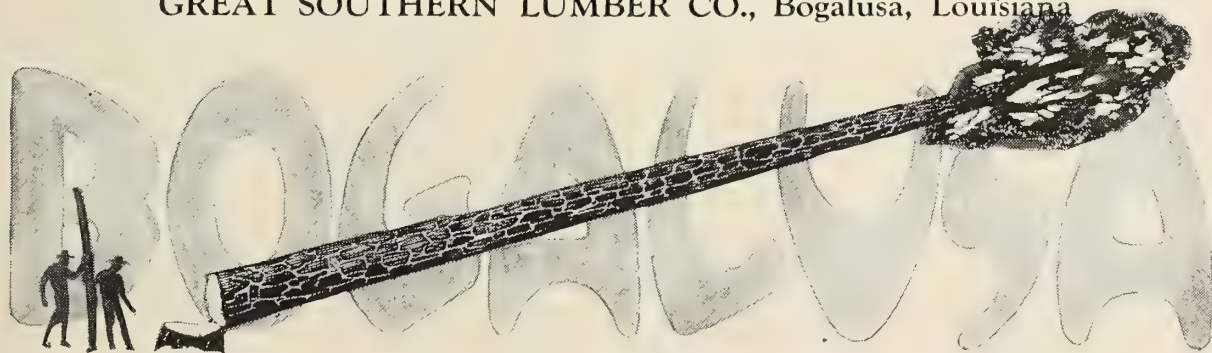
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The United States has 854 paper and pulp mills, of which 339 are pulp mills. Based on value of product, the paper and printing industry ranks seventh among American industries. In 1922 the paper industry used 1,963,000 tons of waste paper. In the same year it used 600,000 tons of rags. In 1922 production of paper was approximately 7,000,000 tons. In 1921 798,896 tons were imported and 48,927 tons exported. The value of paper imports was \$83,254,071 and of exports \$25,690,060. The world's production of paper is about 12,500,000 tons. The per capita consumption in 1920 in the United States was 138.15 pounds of paper. Ranking in value of product of paper and pulp, the principal paper-making states are New York, Maine, Massachusetts, Wisconsin, Michigan, Pennsylvania, Ohio, New Hampshire, New Jersey, Indiana.—*New York Forestry.*

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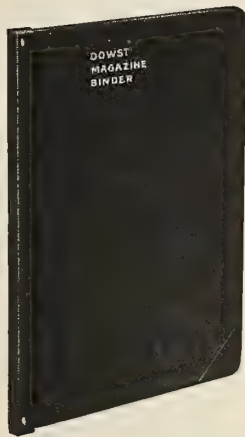
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"Allow me to congratulate you on the contents of the magazine. It certainly has greatly improved and cannot help but be a great factor in putting forestry across in this country."—*William Burnet Apgar*.

"The picture of Lake Sa-ga-na-ga in the May number was a dandy. Just the right atmosphere. The whole magazine is snappy!"—*Arthur H. Carhart*.

"Every time a new issue of AMERICAN FORESTRY has come I have meant to write to you and tell you how much we are enjoying it. Our library just started to subscribe for it in January and every issue seems to be better than the one before."—*Etta Lane Matthews*.

"I enjoy AMERICAN FORESTRY greatly and look forward to each monthly number."—*Senator Charles L. McNary*.

"I am certainly pleased with the change that has come over the magazine and look forward to its coming each month."—*J. Nelson Spaeth*.

"I appreciate what the Association is doing, and the marked improvement in the last few issues of AMERICAN FORESTRY has been observed with a great deal of pleasure."—*C. W. Teneick*.

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"On this occasion I wish to state that the magazine under the present management is indeed a real publication and I personally enjoy it very much."—*R. T. Ferguson*.

"May I congratulate you on the improvement in the magazine? This year it has had more of actual interest to foresters in it, as well as to the general public, than it had ever before, generating from merely a propagandist magazine to a worth-while semi-technical authority. We are past the propaganda stage now and are at the point where the general public is asking the foresters to go ahead and actually do the work they have been blowing so long they would like to do."—*J. E. Pemberton, Jr.*

"AMERICAN FORESTRY is received by the Forest Branch (Canadian) Library and I am very much delighted with its improvement in the last few months. I have read it thoroughly and particularly liked the article on Henry Ford's Forest. It appears to be a real forestry magazine now, and doing a work which is undoubtedly of great good to forestry in America."—*R. C. St. Clair, Victoria, B. C.*

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TEXAS DOUBLES APPROPRIATION FOR FORESTRY

The Texas legislature deserves special commendation for according greater recognition to forestry through increasing the appropriation for the State Department of Forestry from \$20,750 to approximately \$40,000 per annum.

In addition to increasing the appropriation for fire prevention and giving added consideration to the co-operative reforestation policy of the Federal Government, the legislature, for the first time in the history of the state, made a direct appropriation for the purchase of timber lands upon which to demonstrate the practicability of reproducing pine timber on a commercial scale. Though the sum made available is small, aggregating only \$20,000, the significance of the act lies in the recognition by the state government of the necessity of inaugurating a constructive policy in the reproduction of its fast-vanishing timber resources.

The appropriation made available by the legislature for the purchase of a state forest will permit the acquisition of an area of approximately 4,000 acres upon which the State Forestry Department can demonstrate practical forestry. This area will also be extremely useful in working out the many things yet to be ascertained relative to producing successive crops of lumber forests. Through this action of the legislature, Texas falls in line with 17 progressive states which have established state forests varying in areas all the way from 5,000 to over 2,000,000 acres.

LEAD PENCILS

The lowly lead pencil requires a special kind of wood, and the source of it is becoming remote and limited, according to the New York State College of Forestry, at Syracuse University. Manufacturers are having trouble in finding wood for their factories.

A light, strong, smooth, soft-grained wood, free from knots, a wood pliable to the knife and patent-sharpener, is necessary. The red cedar of the South Atlantic states has supplied pencil wood for half a century. It was so plentiful at one time that farmers built their fences of it. Today this supply is exhausted and the old fences are sold for pencil wood at a premium. Most of the wood from which pencils today are made is obtained from the Pacific coast.

The California incense cedar is in great demand. Western juniper is also utilized for this purpose, but it is knotty and a large portion of the tree has to be made into fence-posts and cordwood.

The importance of the supply of wood for lead pencils is better understood when it is known that about 1,000,000,000 pencils are manufactured from American woods every year. Some of the product is exported, but every person in the country, it is estimated, uses approximately seven pencils annually.

One billion pencils represent a product that will probably bring, on the average, five cents apiece, or a total of \$50,000,000 annually. This is an astonishing development since the time the Romans used metallic lead with which they made marks, whence comes the name of the pencil. Graphite was not utilized in pencil-making until the middle ages, in Germany. During the reign of Queen Elizabeth a graphite mine was opened in England, which gave that country a monopoly of the trade. Later Nuremberg, Bavaria, assumed the lead. In those days turning out pencils was considered part of the cabinet-workers' business. A French chemist, Nichols Jaques Conte, discovered how to mix graphite with clay and produce any required degree of hardness. In 1861 the first pencil factory was established in the United States.

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Dogies and Dudes

[Continued from page 478]

have a definite place in the life of the nation. But it is a very emphatic declaration that the National Forests of the West already support a vital, profitable, and far-reaching tourist trade, dependent on the beautities found in these nationally owned forest lands, and that this industry deserves consideration, study, and support comparable in some degree to that given other forest industries in the same regions. Certainly, if the national demands exist, their recreational development should be on a scale reasonable with what has been done with the same type of resources in the National Parks.

MOVIE ACTORS PROTECT THE WOODS

The Famous Players-Lasky Corporation recently filmed Zane Grey's book, "To the Last Man." The picture was made on the Tonto Forest, in the vicinity of Payson, in the same region in which the plot was laid and where Grey actually wrote the story. Many people were used in the work and there was much running about with trucks and horses. The season was dry and hazardous, yet not a single fire accident occurred. The Tonto gives credit for this to Ranger James and to the guide, Mr. A. L. Haught. The picture people were told that if they did not use every precaution they would find themselves fighting forest fires instead of making motion pictures. They preferred to make pictures.

WOOD STAIN PROBLEM

According to W. H. Gibbons, in charge of the Portland office of the United States Forest Service, the losses to the lumber and woodworking trade amount to 10 million dollars through loss in grade of lumber by sap stain and mold. This is a recent estimate by the Forest Service and the Bureau of Plant Industry, based on a survey of the southern pine and hardwood field. The survey is preliminary to a study to be made by the Forest Products Laboratory, Madison, Wisconsin, on sap stain and molds as they affect the wood industries throughout the United States, which includes the western yellow pine industry of the Northwest.

Price reductions based on blue stain degenerate have varied from \$10 to \$27 per M board feet in the sash and mill work field alone, according to figures obtained in the survey. In the cooperage industry the annual loss due to blue stain sap gum lumber were decreased in amounts varying from \$1.50 to as high as \$15 per M board feet. Continued calls made by manufacturers upon the Forest Products Laboratory for suggestions as to means of controlling stain indicate that the problem cannot be completely solved by any method now used. The Western Pine Association is much interested in this proposed study.

ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodmen.

POSITIONS WANTED

GRADUATE FORESTER would like job in Southern Appalachians or Southern Pine Region. Four years in Forest Service. One year in France lumbering with 10th Engineers. One year in state work in fire prevention, where he is now. Has worked from Pennsylvania to Alabama and in Idaho. Some agricultural experience. Address Box 5035, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-23)

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NATIONAL WOOD TURNERS OFFI- CIALLY ENDORSE ASSOCIATION

At the recent annual convention of the National Association of Wood Turners, held in Chicago, the following resolution, commending the work of the American Forestry Association, was passed.

"Recognizing the necessity of a national policy of reforestation, the National Association of Wood Turners wishes to go on record as in favor of a sound reforestation policy, and hereby gives its approval of the aims and services of the American Forestry Association; their efforts to conserve our forest resources for future generations; and recommends to our members its support as the best agency for aiding sound forest policies and imparting popular, as well as scientific, knowledge of forests and the wild life which they shelter."

FACTS WORTH THINKING ABOUT

During the year 1920 just one eastern state, New York, cut more lumber than in the preceding year of 1919. In contrast to this eastern record is that of eleven western states whose lumber cut during 1920 exceeded the cut of 1919. Thus forest exhaustion slowly and silently has sapped the lumber-producing vitality of three-fourths of the states of the nation.

In the decade ending 1920 the production of lumber in the United States decreased practically 25 per cent, while the population of the nation increased 15 per cent. As a result of these conflicting movements our per capita consumption dropped 37 per cent during the thirteen years preceding 1921. Receding forests are, therefore, cutting

down our per capita consumption of lumber at the rate of 3 per cent a year.

Practically 50 per cent of the lumber consumed in the United States is used in the states north of Tennessee and east of Iowa.

The five leading states in lumber production in the United States during 1920, mentioned in order of their production, were Washington, Oregon, Louisiana, Mississippi, and California. These five states produced 50 per cent of all lumber cut in the nation in 1920.

CALIFORNIA FIRE LAW STRENGTHENED

The California State law relating to the setting of fires and the equipment to be used on engines operated on areas where there is danger of fire was not changed during the last session of the legislature, but an additional section was added, requiring certain equipment on all engines used in the woods, which will be of great value in preventing fires from logging equipment, as it requires essentially the Forest Service procedure upon privately owned lands. The Governor has also signed the insect-control bill, which, patterned after the Oregon law, will make possible compulsory co-operation of timber-land owners to control the bark beetle.

BLIMPS TO WAR ON GIPSY MOTH

An interesting development in the fight for the suppression and control of the gipsy moth is the co-operation of the U. S. Army Air Service with the Department of Agriculture in supplying pony blimps for the attack on strategic positions of the damaging moth army along a wide front in New Hampshire.

In thick forests and also upon hilltops ordinary methods of spraying are not practicable and the use of fast airplanes has also been discarded. The slower-moving blimp, it is believed, by hovering over the infested areas, will prove a more effective medium for the thorough spraying of the trees. The work is now under way, the Department reports, and the announcement of results will be awaited with interest.

PLANTING BY MINING COMPANIES

Eight years ago the mining companies of Pennsylvania were planting only 7,600 trees. During the spring of 1922, 38 coal companies of the state planted in the aggregate 1,137,175 forest trees. These companies lead all groups of tree-planters in the Keystone State, planting enough trees to reforest about 1,200 acres of idle land. It has been estimated that when the trees planted this spring reach maturity they will yield at least 36,000,000 board feet of lumber.

This special planting indicates the extent to which the mining companies of Pennsylvania are awakening to the need of providing mine timbers for the future.

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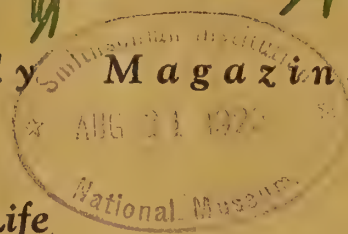
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FOREST RECREATION as a growing need in the

social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

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WASHINGTON, D. C.

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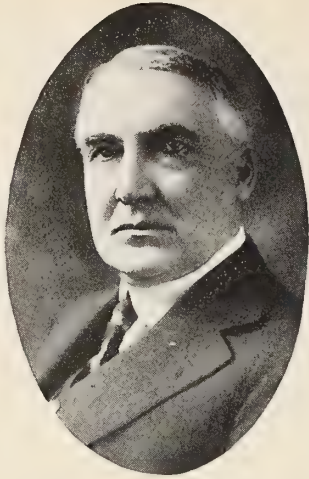
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President Harding

on

Alaska's Forests

UPON his return from Alaska, and only a few days before his untimely death in San Francisco, President Harding made a notable address at Seattle, in which he plainly stated his impression of conditions as he found them in our controversial north-land. The following excerpts from his address reflect clearly his immediate grasp of the Alaskan forest situation and his approval of the forest régime as at present conducted under the Department of Agriculture. Mr. Harding went into Alaska with an open mind, and he came away apparently a convert to the broad policies urged by the conservation forces for the development, through wise use and protection, of the vast natural resources lying within the territory. Touching upon the forests, the President said:

I MUST confess I journeyed to Alaska with the impression that our forest conservation was too drastic, and that in Alaska protest would be heard on every side. Frankly, I had a wrong impression. Alaska favors no miserly hoarding, but her people, Alaskan people, find little to grieve about in the restrictive policies of the Federal Government. There is not unanimity of opinion, but the vast majority is of one mind. The Alaskan people do not wish their natural wealth sacrificed in a vain attempt to defeat the laws of economics, which are everlasting and unchanging. I fear the chief opponents of the forestry policy have never seen Alaska, and their concern for speedy Alaskan development is not inspired by Alaskan interests.

I HAVE alluded to the threatened destruction of the fisheries, due to admitted lack of regulation and protection. We have begun on the safe plan with the forests, even though we may have erred in excessive restrictions. With the lesson of forest destruction painfully learned, with the nation-wide call for reforestation throughout the states, which will require generations and vast painstaking, it has been sought to provide for the utilization of the Alaskan forests and at the same time provide their perpetuation through reproduction. . . .

BUT there is also protest that the red tape of departmental regulation and interference makes it impossible to enlist interest in enterprises which the government in anywise supervises. At this point the answer is easy. This very type of contract is made by the government with the timbering interests in the National Forests in both Alaska and the states, and the manufacturers have been working under it for more than a decade with entire satisfaction. . . .

IN SUBSTANCE, the same considerations explain the slower development of the lumber industry. But the time is at hand for the forest-product development in Alaska. . . . Frankly, I do not look for a rapid development in Alaska. It could only be had at the cost of sacrificing a few immediate available resources and then abandoning the rest. That we do not desire and will not knowingly permit.

URGING the application of a "practical wisdom" to the varied industrial situation in Alaska, the President declared that "the Federal Government's processes have not paralyzed, but have rather promoted, the right sort of Alaskan development. The territory needs their continuance." And, in conclusion, he said: "The problem of Alaska has been dinned into our ears a great deal at Washington. Somehow, in Alaska, one does not hear much of it or feel acutely conscious of its existence. . . . Mine is pride and faith in Alaska. With our rational helpfulness, with our justifiable generosity, her people will work out their destiny and turn a wonderland of riches and incomparable fascination to added power and new glory for our great Republic."

Wild Followers of the Forest

The Effect of Forest Fires on Game and Fish—The Relation of Forests to Game Conservation

BY ALDO LEOPOLD

IT IS "a day of clouds and thick darkness." A forest fire is raging through the hills "like the dawn spread upon the mountains. As a great people, set in battle array," the flames advance, and "the appearance of them is as horses, and as horsemen, so do they run. Like the noise of chariots on the tops of the mountains do they leap; they run like mighty men; they climb the wall like men of war; and they march every one on his way. They break not their ranks; neither doth one thrust another; they march every one in his path."

" . . . O Lord, to thee do I cry, for a fire hath devoured the pastures of the wilderness, and a flame hath burned all the trees of the field. Yea, the beasts of the field pant unto thee, for a fire devoureth before them, and behind them a flame burneth; the land is as a garden of Eden before them, and behind them a desolate wilderness!"

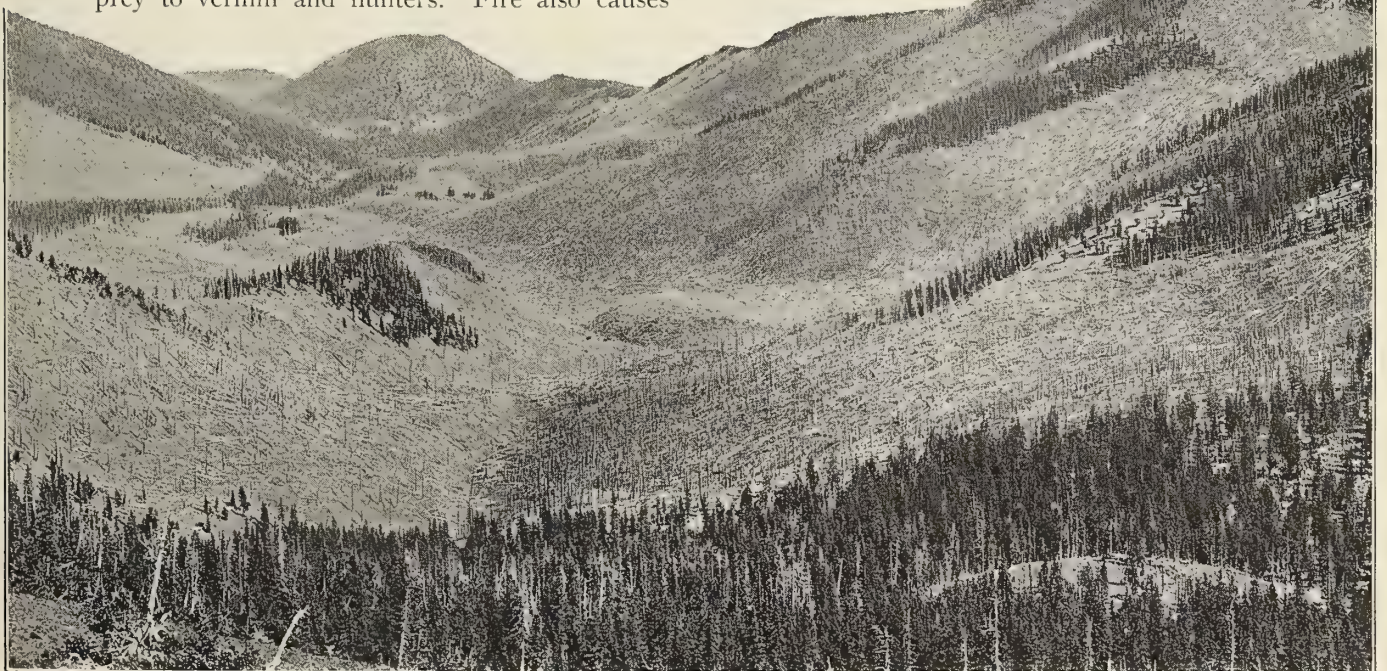
THUS does Joel describe that scourge of all living things, the forest fire. Joel knew, as all woodsmen know, that fire is the enemy of the wild. This article attempts to set forth the manner in which fires affect game, fish, and other wild life, and to point out certain fundamental ideas which must underlie successful conservation, both of forests and of game.

Severe fires sometimes surround and destroy grown animals or birds and kill them outright; but the greatest damage occurs through the destruction of eggs and young, and the ruin of coverts, without which game falls an easy prey to vermin and hunters. Fire also causes

important disturbances among the food plants on which the game is dependent.

Instances of outright destruction of game by fires are numerous and reveal some unanswered and puzzling questions as to the actual effect of fire and smoke on the mind and behavior of animals. The following is quoted from a report by W. T. Cox on the big fires of 1902 in Washington and Oregon:

"In the dense smoke hundreds of grouse, quail, and Mongolian



"FOR A FIRE HATH DEVoured THE PASTURES OF THE WILDERNESS, AND A FLAME HATH BURNED ALL THE TREES OF THE FIELD"



THE SCOURGE OF LIVING THINGS

A ground fire in longleaf pine. The greatest loss of wild life for the country as a whole results from the destruction of eggs and young by every fire, even light ground fires.

pheasant were surrounded by fire and roasted to death. Hundreds more had their wings scorched, and now upon the blackened forest floor fall an easy prey to prowling vermin. Large and small mammals fared no better. Carcasses of deer, bear, cougar, and lynx have been found, and literally thousands of dead squirrels. Wolves and lynx are appearing in unusual numbers since the fires, evidently attracted by the number of ready-prepared roasts to be had in the forest."

Evidence indicates that a big fire causes deer to become so confused that they allow themselves to be surrounded and caught by the flames, but that when they find an open place they know enough to stick to it.

WHEN DEER BECOME STAMPEDED

J. H. Sizer, describing the Mazatzal fire in the Tonto Forest in Arizona in 1921, says: "I encountered a bunch of deer hemmed in by a fire against a rock bluff. These, however, escaped by jumping high over the blaze as I approached, and ran away through the burned area, apparently none the worse off."

Here again deer seem to have allowed themselves to be surrounded by fire. Would they have leaped over the flames and escaped if they had not been disturbed by an intruder, or would they have stayed on the spot and perished?

Frederic Winn, describing the Rose

Peak fire in the Apache Forest in Arizona in 1911, says:

"We saw a white-tail doe and fawn run blindly into a fiercely burning tangle of down timber. Both were probably consumed, as we never saw them come out. This incident happened at night. The deer apparently were terror-stricken."

This sounds like a plain case of stampede. But again it is not clear whether the doe was stampeded by the fire only, or by both the fire and the fire-fighters, or only by the approach of the men.

In 1922, while fighting the Rawmeat Cabin fire in the Gila Forest, in New Mexico, the writer saw a blacktail doe come bounding down a mountain side parallel with the front of the fire and just inside the unburned territory. Probably a crew of men had frightened her. She was heavy with fawn and coming straight at me. When she got within ten yards I thoughtlessly threw up my arms. She wheeled sharp toward the fire, leaped into the flames without hesitation, and disappeared. She may have survived the

flames of the fire-front with nothing worse than a singeing, but there was at least a mile of hot smoking burned-over ground to cross. She could never have crossed it without scorching her hoofs. If a horse or mule scorches a hoof it means a crack in the skin at the hoof-line, fly-blowing of the crack, and slow but cruel death. It must be the same with a deer.

In the case of the doe, it would seem that she knew



A FOLLOWER OF THE FOREST

This beautiful doe was snapped by flashlight while at a salt log, Lassen National Forest, California. Deer are often stampeded by forest fires and perish in the flames.

where she was going until suddenly confronted by a new and unsuspected danger; whereupon she lost her head and perished. Maybe this indicates an answer to puzzling contradictions in the behavior of animals in the presence of fire. Maybe confusion is not immediate, but cumulative.

Henry Van Dyke, in "Fisherman's Luck," has this to say about fires and game: "Let but the trail of smoke drift down the wind across the forest, and all the game for miles and miles will catch the signal for fear and flight." Since he is speaking of the north woods, his statement is probably meant to apply to deer. It implies that

One writer suggests that the new ashes contain salts which the deer relish. I doubt this, because in the Western cattle country the deer are provided with plenty of salt, which is put out for cattle. This is one of the improvements which settlement has made in the potential productiveness of our Western game fields.

If I were to attempt to piece together the evidence at hand, of which the foregoing examples are typical, I would say that deer do not usually flee precipitately from smoke; that they keep out of the way of advancing flames in a leisurely fashion, probably attempting to go around and upwind in the same way as they would do in cases



Courtesy Massachusetts Department of Fisheries and Game

A TRAGEDY WRITTEN BY FIRE

The mother instinct of this Canadian goose defied the oncoming smoke and flames of a forest fire. The result is tragic evidence of how the red scourge of field and forest is destroying our wild life. Eleven million acres in the United States are burned over annually. Consider the terrible loss of potential bird life through the destruction of eggs alone.

flight begins as soon as the scent of fire is caught. This may be true in the north woods, but is not the case with deer in the Southwest. I have seen deer feeding peacefully within half a mile of a big fire that had been filling the woods with smoke for a week. In fact, I have seen where deer went to water across a newly burned area on which snags were still smoking, when they could just as well have gone around it. The same tendency to cross new burns is noted by Show and Price in connection with the Cuyama fire of 1922, in the Santa Barbara Forest of California.

of other disturbance. In doing so they are, of course, liable to be confronted with new fire-fronts in unexpected places and even to be surrounded. They then become increasingly alarmed and often stampede, especially when disturbed by human beings. When stampeded they lose their heads entirely and often perish. When badly harassed by a very severe fire they may lose their fear of humans in the same way they are said to do when hard pressed by dogs, and seek refuge in places occupied by humans. But in ordinary fires this is not the case.



AN UNSUSPECTING BIRD

But, because of the well-known low order of its intelligence, the "fool hen" is easy prey to the common enemy of all wild life—fire.

WHY THE INDIANS SET FOREST AFIRE

There should be considered in this connection the old Indian practice of setting fires for hunting purposes. Most of the explanations of this practice are vague and unsatisfactory. In some regions it probably simply dislodged the game and enabled the Indians to kill it at pass-ways. In parts of Arizona, however, the explanation is entirely different.

Dr. E. W. Nelson, Chief of the Biological Survey, states that on the White Mountain Indian Reservation the deer actually sought refuge in the smoke of fires from the torment of flies which infest the country during the late spring, and that the Apache were accustomed to set fires for the purpose of thus decoying them.

It is safe to say that the direct loss of mature game is heavy in large fiercely burning fires, but for the country as a whole such loss is slight compared to the loss of eggs and young which takes place in every fire, even the so-called "light ground-fires." The salient point about loss of eggs and young is that in most regions the fire season corresponds with the breeding season. In the Southwest, for instance, turkeys and grouse breed in May and June, and deer drop their fawns in June and July. Practically all of the forest fires in the Southwest occur between April 15 and July 15 and accordingly must destroy all the eggs and young of ground-nesting birds on the burned area, as well as many of the fawns, which during that season are so young that they are left "cached out" while their mothers seek water or forage.

It is likewise important to note that prairie fires and ordinary spring clean-up fires about the farm are quite as destructive to breeding game as forest fires. Likewise

spring burning of marshes and meadows makes a clean sweep of the eggs and young of waterfowl. The U. S. Biological Survey has protested this practice of spring burning of marshes and suggests that marshes be not burned or else burned before the birds mate. Spring burning of stubble, brush patches, ditch banks, and waste corners of farms not only makes a clean sweep of the eggs and young of quail, but leaves the old birds without cover at the exact season when live stock has usually grazed off all the cover on the unburned ground or else the farmer has plowed it up. Then comes the spring migration of hawks and the spring activities of house cats and vermin. The birds are either exposed and defenseless or else so crowded into some little island of cover that breeding is impossible.

SOLVING THE PROBLEM OF QUAIL PRODUCTION

Sportsmen will not solve the problem of quail production until every farmer is either persuaded or paid to leave cover, spring cover, on the waste corners of his farm; until spring burning and vermin are controlled in the interest of game, and until refuges are established and winter feed provided to insure the survival of seed stock. Universal appreciation of these truths would produce more quail than a universal year-long closed season throughout



A RARE SIGHT

Fire and bullets have not yet *entirely* exterminated our wild turkey; but this fine bird was "snapped" way down in New Mexico.

the United States or any other elaboration of restrictive game laws that could possibly be devised.

Fire-fighters often have odd experiences with breeding birds. One night a Forest Ranger, putting in the usual "night shift" on a fire in the White Mountains of Arizona, stumbled upon a mother turkey brooding a dozen chicks. The old bird attacked him furiously, pecking and striking sharp blows with the bend of her wing.

Another time in daylight a crew of fire-fighters found a nighthawk brooding her nest directly in front of the flames. They hastily raked a line around the bird, who "sat tight" during the entire proceedings. The fire did not jump the line and left her in possession of a little island of leaves and pine needles, entirely surrounded by bare blackened ground.

A good sample of fire damage to nesting birds is cited by W. H. Aubrey, of the Higgins Lake State Forest in Minnesota. He counted eight nests of ruffed grouse, containing a total of 83 eggs, on a single forty of brush land which had been planted to pine. A fire on this forty meant the loss of eight coveys of grouse—enough to furnish a dozen men with recreation—and potential timber for building forty homes. There are countless forties needlessly burned every year in every state. Who, then, can doubt that fire is the common enemy of game and forest?

FOREST FIRES ROB GAME OF FOOD

Another and highly important relation between fire and game is in the effect of fire on food plants. There is a great diversity of evidence and opinion as to whether the ultimate effect of fire on food plants is good or bad. After years of observation on this subject, I have come to the belief it is nearly always bad. It is a pretty reliable rule of thumb that fire tends to eliminate the plants useful to game or forests and tends to encourage the plants useless to both.

The net ultimate result is a loss, obvious in forest values; less obvious, but true, in game food values. From the game standpoint, the browse which fire destroys is of great importance, because it furnishes the winter feed.

As to the destruction of winter feed, Ranger George R. Stepler, of the Blackfeet Forest, in Montana, cites a good case. The whitetail deer of the North Fork of the Flat-

head "yard up" during the deep snows of winter in a certain locality, where they subsist on tree-moss and willows. During the summer of 1910, the Coal Creek-Anaconda fire burned over about half of this yarding area, destroying the moss and willows and green timber. During the following winter the deer yarded up as usual and about 70 per cent of them died of starvation before spring. Many weakened animals were killed by coyotes before they had a chance to starve. When the snow melted off, Ranger Stepler found and counted the carcasses.

In this case winter feed on the yarding area probably was and always has been the factor determining the local population of deer.

THE LIMITING FACTOR IN GAME CONSERVATION

The deer increase up to the carrying capacity of the yards, and there the increase must stop. When fire cut the capacity of the yards by half, it likewise cut the number of deer.

It may be well to state here that a proper conception of limiting factors is a vital point in game production. Every species in every locality has a limiting factor. It may be winter feed, or spring cover, or unlawful hunting, or overstocking, or a certain kind of vermin, or shortage of water, salt, dust,



Courtesy Minnesota Forest Service

A RESCUED FAWN

Forest Rangers rescued this fawn from fire in the Big Bog area of Minnesota. A number of these baby deer had to be killed by the fire-fighters because their feet had been all but burned off.

grit, or what-not. Whatever it is, a skilled man can isolate and identify it. A problem correctly stated is often a problem solved. If we can intensify the limiting factor by carelessness (as when somebody burned the deer yards), why can we not mitigate it by skill and care? We can. Artificial control of limiting factors is the essence of practical game management.

To return to our topic, a very striking but almost unknown example of the effect of fire on food plants is on the delta of the Colorado in Sonora, Mexico. Here fires are steadily diminishing the open stands of big mesquite trees—highly useful for their fuel wood and fattening beans—and the accompanying stands of nutritious water grass. Jungles of Cachinilla or arrow-weed, utterly useless to man or beast, are replacing these desirable plants.

It must be admitted, however, that in some regions forest fires cause an increase in food plants useful for game. A good example is in the north woods, where berries occur in great abundance after fires and are, of course, valuable

[Continued on page 568]

Lumber in Brazil

BY JOSEPH C. KIRCHER

THE Amazon Valley, rich in resources and capable of wonderful development, is now for the most part still a vast wilderness. Although it covers nearly one-half the area of Brazil, yet it contains only 5 per cent of the population. Here one still finds Indians living in a true primitive state, as yet untouched by civilization. This is the country of Para rubber, which is its chief product. This is also where the Brazil nuts come from.

The forests of this country are composed entirely of hardwoods, of which there are some 400 species. Many of the woods are very beautiful, some of them being hard, fine grained, and capable of taking a fine finish. There are woods of many colors, ranging from white to yellow, brown, red, and black. A few of these woods are exported, although on the whole the forests are yet untouched. Some jacaranda (rosewood), pan setim (satinwood), acapu (ebony-like), and a few others find their way into foreign markets. The lumber requirements of this country itself are very small.

The country to the south of the Amazon can be divided into two parts, the coastal plain and the plateau country back of it. The coastal plain, which extends back from the coast for a distance varying from 20 to 100 miles, contains the large ports and many of the larger cities. Here are Bahia, Rio de Janeiro, and Santos. The country is more or less developed, there being many farms where cotton, tobacco, sugar, and tropical fruits are raised. Here also are large hardwood forests, which run into the foothills and mountains back of the coastal plain.

The west boundary of the coastal plain is the coast range, varying from 2,000 to 3,000 feet high. Back of this is a large rolling plateau, rising slowly toward the west until it reaches the main Andes Mountains, which are west of Brazil, in Bolivia and Peru. The eastern por-

tion of this plateau has been considerably developed. Here is located Sao Paulo, the first industrial city of Brazil, as well as such thriving cities as Bello Horizonte and Curitiba. Here also are the large coffee plantations, which produce 60 per cent of the world's coffee, as well as other farms producing sugar, tobacco, corn, grain, fruit, and live stock.

BRAZIL'S LUMBER REQUIREMENTS

The western part of this plateau is yet undeveloped, al-

though there are many large ranches with thousands of cattle. On portions of this plateau there are also rich ore deposits of gold, copper, iron and manganese, which are being developed. Much of the country is open prairie, although there are wooded hills and in the south are the large pine forests.

It is by the cities and the

railroads of the two latter regions that most of the lumber is used. The total consumption of lumber and ties in Brazil is probably not over 500,000 feet, although no reliable statistics are available. Of this amount probably 100,000 feet are used in the form of railroad ties, and half of the rest is used in the cities of Sao Paulo and Rio de Janeiro. In addition, considerable wood is used for fuel and the manufacture of paper and matches. The total consumption is, however, small for the following reasons:

Most houses are built of stone or adobe, frame houses being little known. Roofs are made either of tile or sheet iron. In most of the larger cities, in fact, tile or iron roofs are required and frame structures are probably not allowed. This method of building naturally reduces the use of construction lumber to a minimum. In the country, because of the warm climate, houses are ordinarily built of adobe, many of them with straw roofs.

The railroad mileage of Brazil is only about one-fifteenth that of the United States. Most of the woods



AT A MILL IN RIO

Logs are brought from Victoria by boat. In Brazil the hardwood logs rather than the lumber are transported to the cities where the lumber is to be used.

used for ties are very hard and durable and railroad rolling stock is much lighter than that in the United States. There are, therefore, fewer tie renewals to make.

There is not as much cheap furniture made in Brazil as in the United States. The laboring man can afford little furniture and his house ordinarily is scantily furnished. In the country many of the poor people have practically no furniture, some not even having beds.

More than 80 per cent of Brazil's population cannot read or write. The market for newsprint, writing, and other papers is, therefore, small. The newspapers do not get out extras nor large Sunday editions.

WOOD TAKES THE PLACE OF COAL

On the other hand, much timber is used for fuel, since there is little coal in Brazil, and that which has been found is of poor quality. No oil has yet been found in the country. Except in some of the larger cities, where gas is available, wood is the universal fuel for cooking. Practically none is needed to heat houses. Most of the railroads also use wood as fuel. No special kind of timber is cut for fuel wood. It is the custom to cut whatever is closest to the railroad, and many species may be found in a single cubic meter.

In addition to fuel, the main uses of wood in Brazil are lumber for general construction, furniture and cabinet-work, ties for railroads, paper pulp, matches, and boxes.

The main use of wood in building is for joists, rafters, floors, doors, windows, and finish. Much wood is also needed for concrete forms, for construction of docks,

bridges, railroad cars, etc. In southern Brazil, Paraná pine is the wood most used, since there are extensive pine forests there. It is, however, not durable when in contact with the soil, and for work requiring durability one of the hardwoods, such as cedro, imbuia, or peroba, is used.

For special uses, some southern yellow pine from the United States or European pine is used; but, although they are superior in quality to the native woods for many purposes, they cannot compete in price. Two kinds of peroba are used—peroba branca, a hard yellow wood, used mainly for floors, and peroba rosa, a hard heavy wood with a reddish tinge, used for general construction.

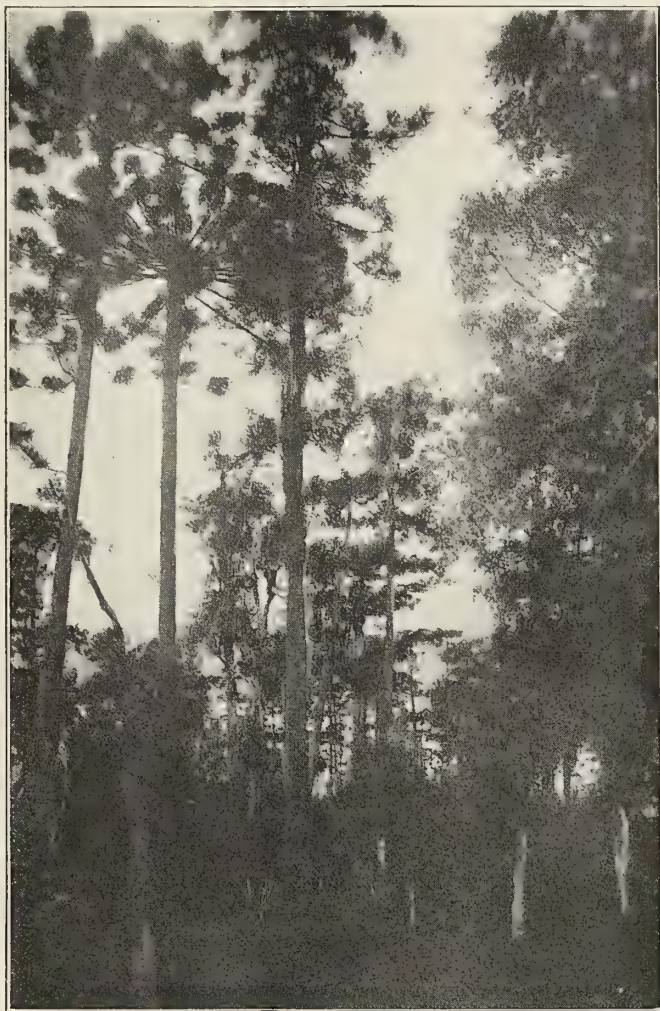
For doors and windows, cedro (Spanish cedar) is ordinarily used, although Paraná pine is sometimes found. The common woods for interior finish are peroba, cedro, canella, imbuia, or jacaranda. Some of the many other hardwoods are occasionally used, especially in parquet flooring. The list is, however, too long to mention here.

A COUNTRY OF WOOD CURIOS

Most of the cheaper furniture is made of peroba branca or peroba rosa. Paraná pine is used some. The better furniture is made of imbuia, cedro, or canella. Fine furniture is also made of many of the other hardwoods, sometimes very elaborately constructed of different-colored inlay work. There are no large furniture factories in Brazil. In all of the cities, however, one finds numerous small factories, which make practically all pieces by hand.

One finds in most of the larger Brazilian

cities many curios and novelties made of wood. There are little tea stands, trays, ash-receivers, canes, lamps, candlesticks, jewel boxes, bowls, etc. Many of these have beautiful inlay work of various colored woods. Practically all of this work is done by hand in small shops and



PARANA PINE

These forests are in the State of Santa Catharina. Thick brush underlies the pines.



READY FOR THE MILL

Sawlogs that have been shipped into the city for milling. Each log has the contents in cubic meters plainly marked on the end, so that he who runs may read.

most of it is beautifully done. Probably 40 or 50 hardwoods are used in this work, jacaranda, imbuia, and canella being the most important.

A number of hardwoods, known as *madeira de lei*, are used as ties. Ordinarily, railroads will accept any of six or eight species for ties and no effort is made to segregate them. Sometimes peroba is used. Recently several of the railroads have been putting down some eucalyptus ties raised on plantations. The Paulista Railroad especially has been experimenting with them. This road has extensive plantations of eucalyptus from which it ultimately hopes to cut all of its ties.

The native paper-pulp industry is still small. Formerly all pulp used by local paper mills was imported from the United States, Canada, or Europe. In recent years, however, several companies have started to use Paraná pine and one umbauba. They are also using other fibers secured from grasses and shrubs.

CIGARETTES TAKE MANY MATCHES

Nearly every Brazilian smokes cigarettes, and there is a large consumption of matches, all of which are made in Brazil and are of the safety kind. They used to import match-wood from Sweden or Norway, but in the past few years importation has practically ceased.

Now nearly all Brazilian matches are made of Paraná pine.

Shipping boxes are now made of Paraná pine. Formerly some yellow pine from the United States was used, but this is now too high-priced. Paraná pine is also used for beer boxes, butter crates, slack cooperage, vegetable crates, etc. It is the Brazilian wood best suited to boxes, for it is light, strong, and holds nails well. Occasionally some canella or cedro are used for boxes, although these woods command too high a price for other uses to be made into boxes on a large scale.

Brazil has only one coniferous wood of commercial importance, the Paraná pine. Its hardwood forests, however, are rich in the variety of species found, and many of these, in addition to those already mentioned, are used, especially locally and in cabinet-work; but the ones already mentioned are the common woods found in the larger markets and they are the only ones of which any large

quantities could be bought. A brief description of each follows:

Pinho Paraná, or Paraná pine (*Araucaria brasiliensis*), The sap wood is a pale yellow, much like that of yellow pine. The heart is darker, sometimes nearly chestnut brown, and often has narrow bright-red streaks running lengthwise in it. It is soft, flexible, of medium weight, and very perishable when in contact with the ground. Unless well seasoned, it warps and twists badly.

Peroba. There are many species of peroba, only a few of which ordinarily find their way to the larger markets. Most of them have not been botanically classified, but probably all are species of *Aspidosperma*. Their wood is strong, durable, very hard and heavy, polishes well, wears smooth, and has a smooth, satiny finish. The color varies with the species, from pale yellow to brown and red, some species also having veins or streaks of darker colors.

Peroba branca, sometimes called peroba do campo, has a uniform yellow, sometimes reddish color. It is a little more yellow than our birch and maple, of which it takes the place in Brazilian wood-working industry.

Peroba rosa has a uniform red color as it comes from the saw. This darkens with exposure to a light brown.

Cedro (*Cedrela brasiliensis*) is not a cedar, but a

hardwood. It is the Spanish cedar which we are accustomed to see in cigar boxes. It is a light, soft, fine-grained wood which takes a good finish.

Canella. There are many species of canella, all of which belong to the family Lauraceæ. The commonest on the market is probably *Nectandra mottis*. The wood of the various species varies, ranging in color from almost white to yellow and brown. That ordinarily on the market is a yellow, fine, and straight-grained wood of medium hardness and weight.

Imbuia (*Nectandra* sp.) is a beautiful brown wood, resembling black walnut in color and texture. It is a heavy, hard, close-grained wood which takes a smooth finish. It is said that in some parts of the country the imbuia is very much lighter, being almost a yellow. Possibly this is another species.

Jacaranda, or rosewood. These are about a half dozen



A PICTURESQUE BRAZILIAN GRASS ROOF

In this instance used to cover a shelter house; the same type of roof is universally used by laborers in the forests of central Brazil.

Community Protection of Migratory Wild Fowl in Florida

BY E. W. NELSON

Chief of the United States Biological Survey

SINCE the Migratory Bird Treaty was negotiated between Great Britain and the United States, in 1916, for the protection of the then rapidly decreasing game and other migratory birds which pass back and forth between Canada and this country each year, many interesting results have been noted. Perhaps the most striking of these have come from the two fundamental restrictions placed on the killing of migratory wild fowl, which include mainly the ducks, geese, swans, and shorebirds. These restrictions were the stopping of the sale of migratory game birds and the stopping of spring shooting throughout the United States, the latest date on which migratory wild fowl may be legally killed each winter in any part of this country being January 31.

Following the enforcement of these restrictions year by year from all parts of the country, information has been received of a remarkable increase of wild fowl, and from the Mississippi Valley come statements that in many localities, at least, it is now possible for sportsmen to

obtain more birds during the fall hunting season than they could in both fall and spring shooting before the Migratory Bird Treaty was put in force. In addition to migratory game birds, there has been a notable increase in many species of migratory non-game birds also.

The obvious benefits derived from the Migratory Bird Treaty and from the Migratory Bird Treaty Act, passed by Congress to enforce its terms, give a striking illustration of the value of proper conservation measures applied to wild life. At the time the act for the enforcement of this treaty was being considered by Congress it encountered active opposition on the part of many who were really interested in

the perpetuation of our wild life, but who doubted the desirability of such a method to accomplish the purpose.

One of the most gratifying experiences in connection with the administration of this law has been the receipt of numerous letters by the Biological Survey from correspondents in various parts of the country, stating that they had originally been against the Migratory Bird



Photograph by E. W. Nelson

WAITING WITH PATIENT CONFIDENCE

View from the foot of the sea wall at Daytona, showing groups of the little scaup ducks idly moving about, waiting for some one to get back from the bakery with more bread.



LESSER SCAUP DUCKS IN HALIFAX RIVER, NEAR DAYTONA, FLORIDA

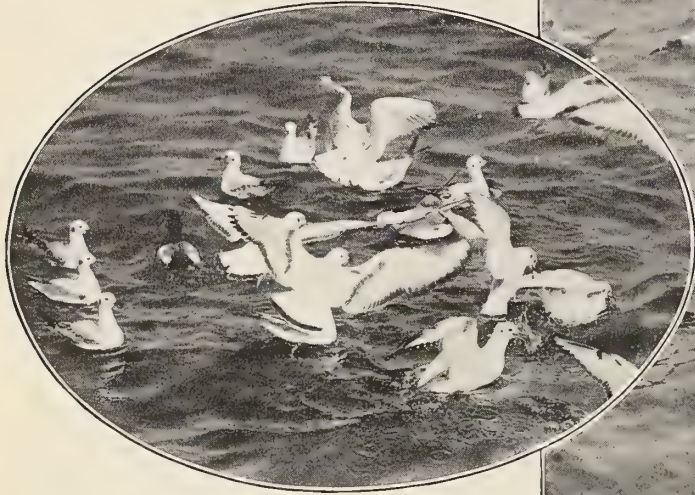
The black dots in the distance on the water are ducks and indicate the great numbers of these birds present at the height of the wintering season.

Treaty, but the beneficial results from it had been so definite that they had become converted and desired to announce that they were henceforth strongly in favor of it.

In view of the increasing need of conservation for our wild life, which is now threatened on all sides with destruction, it appears timely

of Daytona I saw a most striking example of the results which can be obtained by a little attention to these friendly wild fowl.

Daytona, one of Florida's attractive winter resorts, is built along the shore of the Halifax River—a broad salt-



BONAPARTE GULLS NEAR THE SEA WALL
AT DAYTONA



Photograph by George Shiras, 3d

A CONGENIAL PARTY

Bonaparte and laughing gulls feeding with the lesser scaup ducks near the sea wall. The inset shows the handsome markings and grace of the Bonaparte gulls. In winter these birds have pure white heads with a black mark over each ear, but in spring, as they move toward their breeding grounds in the Arctic regions, the entire head becomes black, in marked contrast with their snowy-white neck and body.

to bring attention to these facts.

In the days before overshooting had threatened the existence of our wild fowl, ducks and geese nested in many parts of the United States, particularly in the northern half. For many years previous to the Migratory Bird Treaty, however, spring shooting made it almost an impossibility for wild fowl desiring to nest in many parts of the United States to survive the pursuit of the hunter, and nesting birds became a rarity in vast areas which they formerly frequented. Since the stopping of spring shooting the wild fowl are coming back gradually, and in many places where they were long unknown they now raise large numbers of young.

Another interesting outcome of the Migratory Bird Treaty has been the confidence with which great numbers of ducks of various species, finding themselves unmolested, frequent waters in the vicinity of human habitations, particularly after the close of the hunting season. These attractive birds even come close to towns, and thus afford many people opportunities for a close acquaintanceship with their interesting ways, such as they have never before enjoyed.

In the salt-water inlets bordering the coast of Florida, as well as in the fresh-water lakes and streams of the state, enormous numbers of lesser scaup ducks winter each year. They have the habit of keeping in rather compact groups on the water, called "rafting." The numbers in these groups, or "rafts," vary from a few individuals up to great masses of birds numbering thousands, which form compact, dark patches on the water. During a visit to Florida last February and March, at the town

water inlet from the Atlantic. Beach Street, the main street of the town, is bordered along the water's edge by a low sea wall, level with the roadway, which forms a popular public promenade. The opposite side of this long street is occupied by the principal business houses of the town. At irregular intervals along the water front a few short piers extend out for the accommodation of small steamers and other boats.

In the winter of 1922, at a luncheon of the Rotary Club in Daytona, George Shiras, 3d, whose winter home is only a few miles from this place, called attention to the ducks and other waterfowl frequenting the river in front of the town, and suggested that by regularly feeding these birds they might be induced to haunt the immediate shore and thus become a source of great interest and pleasure to every one. The Rotary Club followed the suggestion, and in the winter of 1922-23 subscribed a modest fund to pay for corn and other food. The interest of the local Boy Scout organization was enlisted, and the regular feeding time for the birds was set at 3:30 in the afternoon, when a Boy Scout sounds a bugle call from the sea wall. The ducks, which ordinarily can be seen in the river several hundred yards offshore, have learned to respond to this call and come in by hundreds to be fed along the shore.

In company with Mr. Shiras I made several visits to Daytona in March, 1923, and each time saw about three

hundred lesser scaup ducks, which appeared to be continuously located in front of the town, while varying numbers of ring-billed, herring, Bonaparte, and laughing gulls were scattered about the water front or grouped on small sand bars or other convenient resting places.

The ducks had evidently learned to watch the people along the sea wall, and as soon as we appeared there with loaves of stale bread (purchased at a bakery across the street at two cents each) and began to throw fragments on the water, the birds came swimming to the base of the sea wall to feed greedily on the offerings, many of the birds coming within 10 or 15 feet of us. An abundance of stale bread appeared to be available, and other people joined in the feeding, creating great excitement among the birds, which swam quickly from place to place, groups of them rushing in pursuit of the larger fragments. Occasionally a piece too large to be swallowed would result in a free-for-all scramble, sometimes the bread fragment being carried under water by the momentary possessor, while the others followed either below or on the surface.

had unlimited opportunities for securing beautiful pictures of wild birds in the very heart of a town of several thousand people. The trim figures and delicate coloration of the ducks, with the varied plumages and the graceful movements of the large and small gulls constantly grouping and regrouping, made a fascinating picture of wild life such as one has rarely the opportunity of finding even in a remote wilderness.

At times when feeding is in progress the sea wall will be occupied by hundreds of people, to whose presence the birds appear to be almost completely indifferent. That they have not wholly lost their wariness, however, was significantly shown in one instance, when a boat occupied by two people left a pier about five hundred yards from where the ducks were feeding and began to row toward them along the shore. When the boat was still more than two hundred yards away, all of the birds suddenly arose and flew out to the middle of the river, where they alighted. After the boat had passed I continued throwing in bread, and the ducks then swam steadily in and resumed feeding

within a few feet of me, showing that they exercised definite discrimination in matters of confidence, and that to them a row-boat still signified danger. The accompanying



Photograph by E. W. Nelson

A BATTLE ROYAL

When a large piece of bread is thrown into the water from the sea wall the ducks rush for it, beating the water into foam about the prize they pursue, as shown in the background of this view, while the birds in the foreground wait expectantly for more. The inset shows the ducks in the midst of the scramble. The foam on the water resulting from the turmoil is well shown.



Photograph by George Shiras, 3d

A "CLOSE UP" OF THE SCRAP

Frequently the water would be beaten into foam by the animated contest of the birds. In the midst of the feeding ducks, representatives of the species of gulls already mentioned moved gracefully about, hovering to drop down to carry off morsels of food here and there, and at times forming beautiful groups, which added greatly to the animated and picturesque scene.

The entire exhibition was exhilarating and delightful to a wonderful degree. Here the tourists and townspeople

photographs, which I took with a kodak along the sea wall, are sufficient indication of what can be done in the way of obtaining pictures with ordinary cameras. The photographs taken by Mr. Shiras show what can be done with a larger and more powerful lens.

The extraordinary gathering of many species of wild ducks on Lake Merritt, in the heart of the city of Oakland, California, each winter, where they are fed on the lawn bordering the lake in the midst of surrounding crowds of people, and the daily scenes on the water front at Daytona indicate how readily our wild fowl will respond to kind treatment if given the opportunity. There are numerous other places in Florida where birds might be located for the season and become a marked added attraction. As can be well imagined, the people at Daytona and along the water front for some miles are intensely interested in the protection of these birds and would bitterly resent any shooting of them.

Both in Florida and since my return North the story of the Daytona birds has appeared to interest many people and has brought forth statements of the desire similarly to protect and gain the confidence of wild fowl along the water fronts of other towns. I believe that feeding and attracting birds of this kind, so that the public can have an opportunity to become familiar with them, presents a

wonderful chance for local Audubon societies to extend the interest of their work and enlarge their usefulness in many communities. For some months each winter large numbers of ducks and other waterfowl frequent the Potomac River and the Tidal Basin, at Washington, and offer an excellent opportunity to repeat the Daytona experiment.

The extent to which wild fowl attract and interest practically every one was indicated on a small steamer on which I traveled from Tampa to St. Petersburg, Florida, during my recent trip in that state. As we entered the harbor of St. Petersburg flocks of pelicans, black skimmers, terns, and



Photograph by E. W. Nelson

THE INDIFFERENCE OF REPLETION

When the ducks have been well fed they turn their backs on their entertainers and move slowly out to their resting places in the middle of the river.

gulls arose from their resting places on sand bars and piling, and every one on board, numbering perhaps one hundred people, crowded the rail of the boat, showing the most animated interest in the birds, which at once formed the subject of comment and admiration. This interest is so widespread, as has been shown many times, that it needs only leadership to cultivate it to the great benefit of the birds and their human friends.

First California Fire Prevention Order

The first legislation against forest fires in California was in the form of a proclamation issued by Governor José Joaquín Arrillaga, under date of May 31, 1793, from Santa Barbara. It was enclosed in a letter which he sent Father Presidente Lasuen, who was stationed at Mission San Carlos, and as the successor of Father Juníper Serra was the head of the California missions.

It appears that in the early days Indians, Christians, and Gentiles had been careless in starting fires. Part of Governor Arrillaga's letter to Father Lasuen is as follows:

"About the serious damages that result from fires which every year the Indians, Christians, and Gentiles start in the fields, etc., I have taken steps to publish the following proclamation. I forward it to Your Reverence with the petition and request that you be pleased to make

it known to all the reverend missionaries, in order that on their part they contribute to this just measure, and that they threaten the Christian Indians with rigors of justice in case fires are started," etc.

According to Father Englehardt's history, Father Lasuen accordingly sent a circular to all the missionaries, with instructions to publish the proclamation, to place a copy in the archives, and to republish it annually.

This proclamation is said by Father Englehardt to have been published or read each year by the missionaries up to 1804, the year that Governor José Joaquín Arrillaga died.

No penalties were fixed in the proclamation, but punishment was threatened for violation of the executive order.—From the *Santa Barbara Morning Press*.

THE ASSOCIATION'S NEW QUARTERS

On September 15th the Association will move from its temporary quarters at 914 Fourteenth Street to its new location, the Lenox Building, 1523 L Street N. W.



Come, All Ye Jolly Shanty Boys

THIS old logging camp song is printed as an interesting bit of American lumbering history. The verses as here given are believed to be the original and were secured by Mr. William W. Bartlett, of Eau Claire, Wisconsin, who obtained them from a man whose father had, years ago, sung the song in the Wisconsin woods. Composed by lumberjacks and sung in the early lumbering days on the Wisconsin River, it was later taken up by the lumberjacks on the Chippewa River and sung in the camps there. There is an Eau Claire River, a tributary of the Chippewa, but the "Big Eau Claire" mentioned in the song is a tributary of the Wisconsin. The song has never been set to music in print, but the simple tune to which it is sung is very interesting and appropriate.

Come, all ye jolly shanty boys, and listen to my song ;
'Tis one I've just invented and it won't detain you long ;
'Tis of a pretty maiden, a damsel young and fair,
Who dearly loved a shanty boy upon the Big Eau Claire.

The shanty boy was handsome, a husky lad was he ;
In summer time he labored in the mills at Mosinee,
But when cold winter came along and blew its blasting breeze,
He worked upon the Big Eau Claire, a chopping down pine trees.

He loved a milliner's daughter, he loved her long and well,
But circumstances happened and this is what befell :
The milliner swore the shanty boy her daughter ne'er should wed,
But Sallie did not care a darn for all her mother said.

So when brown autumn came along and ripened all the crops,
She lighted out for Baraboo and went to picking hops ;
But in this occupation she found but little joy,
For thoughts came rushing to her mind about her shanty boy.

She took the scarlet fever, lay sick a week or two
Within a dreary pest-house, way down in Baraboo,
And oftentimes in her ravings she tore her auburn hair,
As she talked about the shanty boy upon the Big Eau Claire.

When this news reached the shanty boy his vocation he did leave ;

His terrible anxiety was awful to perceive.
He hid his saw in a hollow log and carried off his ax,
And hired out to pilot on a fleet of lumberjacks.

'Twas at the Falls of Mosinee from a precipice fell he,
And put an end to his career and all his misery.
The bold Wisconsin River is rolling o'er his brow,
His friends and his companions are weeping for him now.

The milliner now is bankrupt, her shop has gone to rack ;

She talks of moving some fine day down to Fond du Lac.

At night her pillow's haunted by her daughter's auburn hair

And the ghost of that young shanty boy upon the Big Eau Claire.

Come all ye maids with tender hearts and be advised by me,

Don't be too fast to fall in love with every one you see ;
The shanty boys are rowdies, as everybody knows ;
They dwell far in the forest, where the mighty pine tree grows.

In stealing logs and shingle bolts and telling jokes and lies,

And playing cards and swearing, they get their exercise ;
But if you will get married for comfort and for joy,
I'd have you for your husband choose an honest shanty boy.



IN THE HEART OF THE RUBY RANGE

Upper: A close-up view of the placid waters and picturesque shoreline of Liberty Lake.

Lower: The vivid beauty of the mountain meadow vegetation is excelled only by the marvelous coloring of the ruby peaks.

The Ruby Range

BY JAMES E. SCOTT

IN THE summer of 1921 the forest supervisor at Elko, Nevada, was a hustling, live-wire individual named Favre. Favre's job was the supervision and direction of the Forest Service activities within the Humboldt National Forest—one and one-half million acres of Uncle Sam's domain in three big and widely separated divisions. The vast summer range areas of the Humboldt annually support some 400,000 head of sheep and 60,000 cattle and horses, grazed under Forest Service regulations. The

Ruby Division. To this latter part of the discourse I would listen politely, but certainly with that "listen to him rave" expression which one is prone to wear when feeling certain that the discourses is handling the facts carelessly.

I had been in Nevada several times. I had learned that the night trains through eastern Nevada were the ones to take; that the colored gentleman in the club car was really trying to be helpful in his suggestion that across this section it would be well to pull the shades down, for, as he



A TIER OF LAKES IN A LAND OF BEAUTY

Three lakes at head of Kleckner Creek, across Liberty Pass from the Lamoille side of the range. Liberty Lake in the foreground with Favre Lake next below and Thirs Lake on a shelf in background, as yet unnamed.

vitaly important Forest watersheds are protected against overgrazing, excessive cutting of the none-too-plentiful timber and cordwood crops, fire, and other destructive agencies. An improvement program involving a forest-wide telephone system, many miles of roads and trails, and the development of stock watering places and other facilities designed to bring about more complete yet conservative use of the forage resource is continually under way.

Favre loved it all. I had known him for a number of years, and every meeting involved listening to an earnest dissertation on his part, on the economic values of the Humboldt, which I could readily appreciate, and especially on the scenic value and general outdoor attraction of his

said, "The scenery ain't nothing much, and it keeps the dust and heat out." As for motoring along the main highways, I was inclined to agree with the transcontinental tourist, that this section of Nevada "is simply a big stretch we've got to cross to get anywhere; so let's get it over with."

But I have found in this same eastern Nevada a veritable outdoor paradise—and I got up high enough above the drab Nevada valley land to know that there are others in the same region.

I rolled into Elko one hot afternoon—yes, we had the shades drawn in the car all the way across from Lucin—and ran up to see Favre. I was sorry then, but am glad



A VIEW FROM OUR CAMP

On the shelf at the foot of Liberty Pass, on the Lamoille side, where our camp overlooked the whole beautiful canyon.

now, that he was primed to start that evening on a trip over his Ruby Division, and I could not, or at least did not dare to, decline his insistent invitation that I join the party.

We started in Favre's roadster. Leaving Elko, we struck out to the east on a first-class highway. Six miles out of town we reached the summit of a low range of hills which somebody with a delicate sense of humor named the Elko Mountains. As we topped the summit I took a sharp breath and I guess my mouth fell open. Favre turned my way with a gloating smile.

Directly to the east, fifteen miles away, spread out before us a wonderful panorama of mountain range reaching up 5,000 feet above the level of the plain to a skyline of peaks and crags, some of which reached more than 11,000 feet in altitude. Broken only twice in its entire length, by Harrison Pass on the south and Secret Pass on the north end, and bathed in the glow of desert sunset with a ruby coloring of remarkable richness and beauty, the Ruby Range at this first real view surely promised to make good every boast I had heard Favre make.

The Ruby Range starts at a point a few miles southwest of Wells, on the Southern Pacific and Western Pacific railroads, and runs south or slightly west of south for more than 100 miles. It was withdrawn as a National Forest in 1904 on petition of the local people, who now often designate it as "the biggest asset in the State of Nevada."

Its chief value is as a watershed, providing a steady flow of water for the irrigated lands of Ruby, Clover, Lamoille, Star, Humboldt, and other valleys. It is undoubtedly the most important watershed in Nevada, excluding the Sierras. Approximately 5,000 people depend upon its water for irrigation, and its summer range areas also are intensively used.

We sped on toward the base of the range, and twenty-four miles from Elko, a comfortable run of an hour and a half, we reached Lamoille. This village, at the mouth of Lamoille Canyon, about midway in the range, is a delightful place to stop. It is a pretty little spot, the commercial center of a rich agricul-

tural valley. Excellent camp sites, the purest of water, and furnished tents are available. There also is a good hotel.

At the time of my visit plans were on foot to reroute the main highway from Elko eastward through Lamoille, and thence along the base of the Ruby Range northeastward, striking the present highway again near the north end of the range. The change would surely be worth while from the traveler's viewpoint. It would lengthen the trip but little and it would add immeasurably to its pleasure.

We stopped at Lamoille for the night. Early next morning we outfitted with pack-horses at a near-by ranch and struck up Lamoille Canyon. Expectations, raised greatly by the long-distance view of the range from the Elko Ridge and from Lamoille, were more than fulfilled.



SNOWBANKS IN AUGUST AT THE WATER'S EDGE

Across Liberty Pass from Lamoille Creek to Liberty Lake, which, with two other lakes, forms the headwaters of Kleckner Creek.

The first three miles of the trail up the canyon afforded nothing unusual, although delightful camp sites along a rushing mountain stream, with slopes richly colored, looked always inviting.

Three miles up from the canyon mouth the stream forked and the trail followed the left fork to Liberty Pass, on the divide.

From the forks one beautiful and inspiring scene after another opened up until in the upper reaches among the lakes and jagged peaks there came a wondrous climax to the trip. The illustrations afford the best evidence of what is to be seen and they tell the story better than any adjectives I

know could do it. There is timber—beautiful aspen groves affording summer home sites almost legion—enough limber pine to trim the colorful peaks, ledges, and towering cliffs, room on both sides of the stream, water in abundance rushing and tumbling down the steep slopes in silvery falls and cascades, and a rich vegetation which affords a veritable riot of harmonious coloring.

The Lamoille lakes, a series of three mirrorlike sheets of water nestling up under the perpetual snowbanks; a similar series across Liberty Pass on the Kleckner drainage, and perhaps a dozen others scattered here and there among the peaks, are alone worth a journey many times as long and hard.

Steps are being taken to stock these lakes with eastern brook trout, and the streams and lakes will yield real sport for the angler. Tracks of deer, mountain lion, and coyote were seen, while the sage hens are plentiful lower down.

The region is wholly undeveloped. Call that a drawback if you will, but to the lover of nature undisturbed it is no such thing. A road can be built from the Lamoille Canyon to the Lamoille lakes at a reasonable cost, as canyon roads go. With such a road, the local people in hundreds will flock to Lamoille Canyon for their vacations.

Summer homes will spring up in large numbers and the cross-country tourist will have a side trip from Lamoille which will be remembered as one of the most pleasant diversions between the coasts.

By pack outfit we reached the summit early in the day. During that afternoon and the next forenoon we

climbed across the Liberty Pass, scaled one of the peaks, and spent delightful hours among the Alpine lakes. The second afternoon we rode back down the canyon to Lamoille, reaching there very comfortably before sundown.

My ideas of eastern Nevada were promptly and radically revised. There doubtless is a lot of desert, but assuredly there are compensations, if one will just get away from the main through routes. Hereafter when Favre, his successor at Elko, or any one else begins to dwell upon the scenic beauties and outdoor attractions of the Humboldt National Forest, I am sure it would be well worth while to listen respectfully and very much worth while to accept any invitations which would result in other pleasant days among the peaks and lakes of this glorious Nevada range.



MIRRORS OF THE RUBY RANGE

Clear, deep, and jewel-like in their setting, we counted twelve of these lakes from one high point.

An Echo from the Good Old Days

The service letter of Pennsylvania's Department of Forests and Water says that early timber scalers wore full-dress suits. The item states: "John B. Quigley began measuring trees at Chathams Run in 1846 with George A. Crawford (later Governor of Kansas) and Col. Newton C. Gross. They wore full-dress suits, white ties, and silk hats." All those in favor of adopting this uniform in place of the one now in use say "aye!"

The "noes" have it!

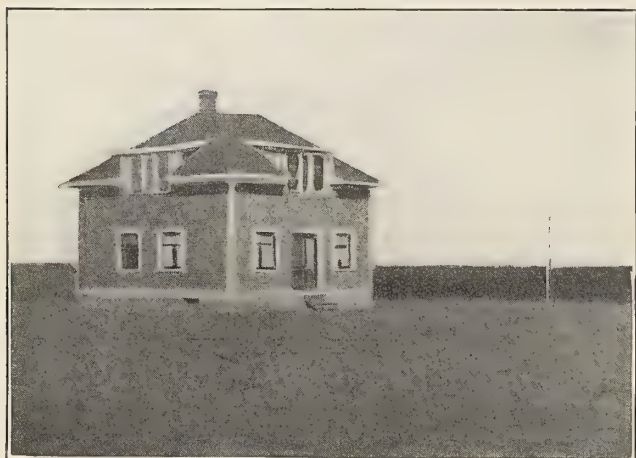
Pinchot Signs Rothrock Memorial Bill

On July 11 Governor Pinchot signed the bill that authorized him to appoint a commission of five Senators to be known as the "Joseph T. Rothrock Memorial Commission." The Commission is authorized to secure a boulder from State forest land and locate the same in an appropriate spot in the borough of McVeytown, Mifflin County, as a memorial to commemorate the service in forestry interests of the State of Dr. J. T. Rothrock, an early pioneer in Pennsylvania forestry.

Tree-Planting on Prairie Farms

BY GEORGE A. BARCLAY

TREE-PLANTING is transforming the prairies of western Canada. The tree-line, which fifty years ago was located a comparatively short distance west of the Red River, in Manitoba, has advanced several hundred miles into what was formerly bald prairie. Groves of thriving trees embower thousands of farm homes, imparting shade in the summer, giving shelter to farm stock, and adding beauty to the landscape.



An intensive tree-planting campaign is being carried out throughout the West. The prairies for the most part are naturally treeless, like the western plains of the United States, except for sparse birch and poplar along the watercourses; but the soil that produces more wheat in large areas than any other soil in the world contains all the elements of tree growth.

The distribution of trees is conducted by the Dominion Government and the Canadian Pacific Railway. The government maintains two huge nurseries, one at Indian Head and the other at Sutherland, Saskatchewan. Between 6,000,000 and 7,000,000 trees are distributed free to farmers in the prairie provinces by these nurseries every year. Since the movement first began 60,000,000 trees have been planted in Manitoba, Saskatchewan, and Alberta. The government's work, it is estimated, has resulted in the establishment of 40,000 shelter belts on the prairies.

The Canadian Pacific Railway has a large nursery at

Wolsely, Saskatchewan. It restricts its distribution to farmers in the extensive irrigation block in southern Alberta. In the last eight years it has sent out to the settlers in this district more than 500,000 trees.

Distribution of trees on the largest scale ever attempted will be made by the Dominion Government this year, according to official reports. More than 8,000,000 trees will be sent out from two government nurseries to farmers this spring. New settlers on the prairies everywhere are planting trees. In a few years their homes will be surrounded by bits of woodland reminiscent, perhaps, of the homes they left in the timber country when they trekked across the international line.

The system of distribution of trees employed by the Dominion Government practically assures successful culture. Farmers must agree to prepare their land for tree-planting under directions from the nursery farms before



A TRUE STORY—WHAT TREES MEAN TO A PRAIRIE HOME

Just another "Before and After"—and the pictures speak for themselves. It is the Alberta home of Mr. Archibald Mitchell, western lecturer of the Canadian Forestry Association.

they receive the trees. Inspectors visit the farms from time to time to see that directions are being followed and the trees are being given proper attention. With a little cultivation the first year or two, the transplanted trees take care of themselves. Government figures show that 85 per cent of the trees distributed have grown successfully. One Saskatchewan farmer reported the loss of only one dozen out of 10,000 trees.

The prairie farmer is given a wide variety of trees to choose from for his grove. Careful testing and experimentation by the government has determined the kinds



ROWS OF BABY JACK PINE AT THE GOVERNMENT INDIAN HEAD NURSERY—
THE "YOUNG HOPES" OF THE PRAIRIE HOME OMEN

that will thrive best in the soil and climate of the West. For rapid growth and production, Russian poplar, green ash, Russian willow, cottonwood, caragana, and various members of the elm family have been found satisfactory.

For longer life, greater hardiness, and more valuable timber material, Manitoba maple and various kinds of conifers, such as jack pine, Douglas fir, white spruce, and American larch, are preferable. Many farmers have found it profitable to plant long-lived species with those of earlier maturity. By this means the quick-growing species furnishes shade, protection, and material first, and are then superseded by the slower-growing varieties.



A POTENT AGENCY IN THE TRANSFORMATION OF CANADIAN PRAIRIE HOMES—
TREE-PLANTERS IN SASKATCHEWAN



INVITING GARDENS ARE NOW BECOMING COMMON IN THE CANADIAN PRAIRIE
REGIONS

Generally speaking, farmers find it most satisfactory to plant their trees in belts containing five to eight rows, with the trees spaced four feet apart each way. In some cases wider belts are successful, but for the most part narrower belts, with the ground around their outer edges well cultivated, have stood up better. It has been found that the trees will prosper best if they are planted on deeply worked summer fallow.

Shelter belts add from \$500 to \$5,000 to the value of the farmer's land, actual results have shown. The cost of setting out the trees amounts to practically nothing. Labor is the only expense. In addition to the financial increment and the benefits of shelter to homes and live stock, these belts yield a surprising

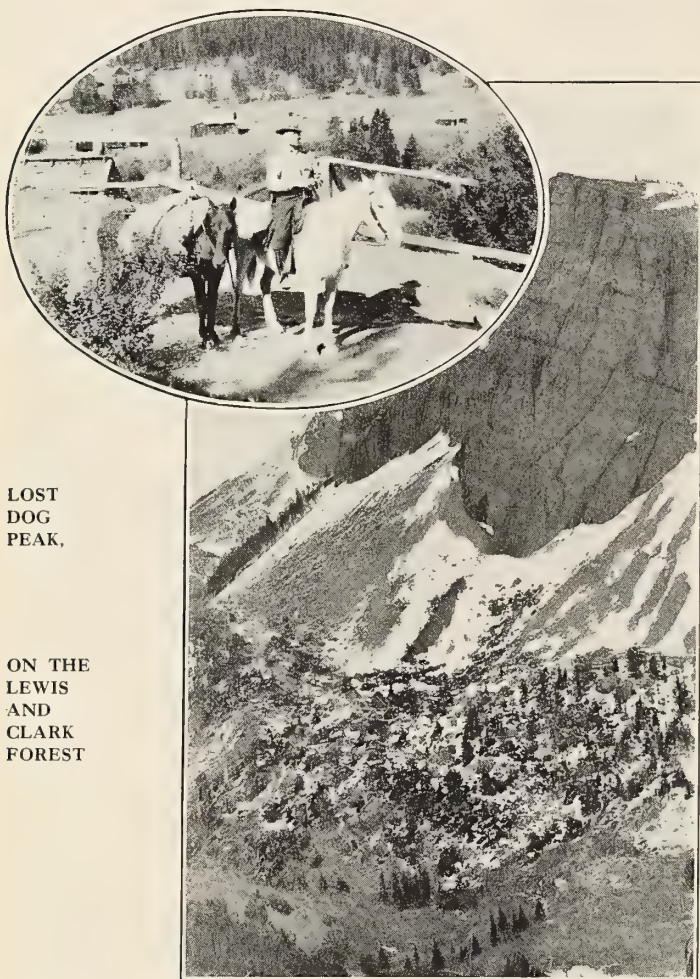
amount of useful farm timber as they grow older. Small lumber for building construction, posts, poles for implements, tool handles, neck-yokes, whiffletrees, and fuel in good quantities are all available. Land seeded to Russian poplar on one farm cut eighteen and a half cords of marketable firewood to the acre in the eighth year of its growth.

Another interesting feature of tree-planting on the prairies is the protection that shelter belts will give a young crop. On the Dominion experimental farm at Indian Head, Saskatchewan, it was found that a forest growth would yield fifty feet of protection to every foot in height the trees grew. On this farm a field of barley was sown alongside a shelter belt.

A violent storm came and with it a wind of high velocity. The trees were fifteen feet high and showed their protective influence to a marked degree. When the storm was over the results were noted. For 750 feet out from the shelter belt the grain was green and well protected. Beyond the protective influence of the trees the grain grew thinner and thinner until it was finally obliterated.

Adaptability of the western prairies to tree culture has long since passed the experimental stage. The demand for trees has grown greater from year to year. Experts declare that, as a result of the present intensive campaign, another fifty years will see the once treeless prairies completely transformed into a region of groves and woodlands.

The Thrilling Life of a Ranger



LOST
DOG
PEAK,

ON THE
LEWIS
AND
CLARK
FOREST

IN HIS story, which won the second prize in our recent contest, Ranger Price skims lightly over thrills enough to last the ordinary man a lifetime, to stress what must have been a terrifying experience, described in "A Leap in the Dark," on the following page. In order to furnish the possible skeptic among our readers with documentary evidence of the truth of the tale, we present herewith a picture of the very cliff which figured in the story, which may be more convincing, though less graphic, than the pen-and-ink drawings which accompany the text. The little oval inset shows Mr. Price in ranger garb, who, in acknowledging his prize, a Winchester .94,

wrote: "I killed a wolf with it just outside the city limits; about 30 minutes after I unpacked it; then killed a three-year-old beef steer that same evening for a rancher. One shot did the work in both instances. I am surely tickled with it. . . . In digging into an old trunk tray, I found a kodak film of the mountain where the experience occurred. It is now known as 'Lost Dog Peak,' on the Lewis and Clark Forest."

The British Empire Forestry Conference

OTTAWA, Aug. 17.—The second British Empire Forestry Conference opened at Ottawa, Canada, on July 25, under the distinguished chairmanship of Major-General Lord Lovat, executive head of the British Forestry Commission, which is carrying out a gigantic program of reforestation in the British Isles. Delegates present represented not only all of the Canadian Forest Services, but various professional and business interests of the United Kingdom, the Crown Colonies, and Protectorates, such as Nigeria, Kenya, the Straits settlements, the Federated Malay States, and British Guiana. India, Australia, and New Zealand were represented by their chief forestry officers, and the educational institutions of Canada and the Mother Country had members of their staffs present. Although the conference was primarily called to deal with Empire problems the delegates were delighted to have present at the Ottawa meetings Henry Solon Graves, President of the American Forestry Association and Dean of the Yale Forest School, and Ralph Hosmer, of Cornell. The contribution made to the program by Colonel W. B. Greeley (in absentia) and by Dr. Graves, were highly esteemed and the presence of Messrs. Graves and Hosmer was one of the most appreciated features of the convention.

The general aim of the conference was to find ways and means of making the Empire self-sustaining in its timber supply. This involves careful stock taking of the forest resources, the pooling of information in regard thereto, and the establishment of facilities for increasing Empire trade generally in forest products. It was brought out very clearly in many of the discussions that trade possibilities have been neglected, often purely through ignorance regarding supplies and facilities. The conference undoubtedly succeeded in placing plainly before the people of Canada and other parts of the British Empire the actual condition of forestry affairs wherever the British flag flies. In some parts of the Empire forest management is on the basis of sustained yield, while in others cutting is carried on greatly in excess of annual growth. In the British Empire as a whole the woods capital is being seriously impaired. The general situation may be reduced to the following facts:

The British Empire has 700,000 square miles of "effective forests," the remaining area being unprofitable or inaccessible.

Canada has about 50 per cent of the total, India 14 per cent, Nigeria and the Gold Coast 14 per cent, Australia and New Zealand about 8 per cent.

[Continued on page 566]

A Leap in the Dark

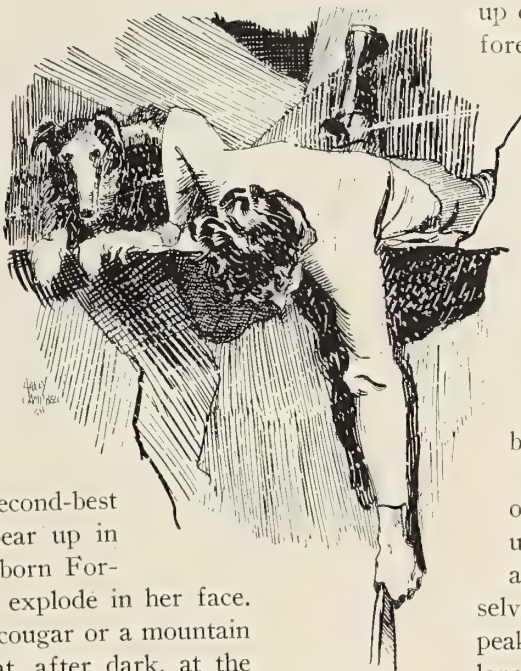
My Most Exciting Experience as a Forest Ranger

BY A. PRICE TOWNSEND

FOR thirteen years I have been a forest ranger in the mountains of Montana and Wyoming. I have never counted the number of times I have nearly missed death in ways that are not pleasant to look back upon. I might relate, for example, how in the Teton Mountains, in 1912, I merely outran an avalanche of snow, rocks, and snapping timber on a pair of skis which balled up with melting snow, or how in 1909, on the Blackfoot Forest, I had a boot-heel shot off by a crazy sheep herder, or how I came out second-best in an encounter with a cinnamon bear up in the Falls Creek country of the Dearborn Forest, after a Krag cartridge failed to explode in her face. I might tell how I got in bed with a cougar or a mountain lion or some other kind of a wildcat, after dark, at the end of a hard day's work, in a deserted cabin on Headquarters' Creek of the Lewis and Clark Forest, or how I was half-baked in the canyon of Deep Creek during the forest fires of 1910, or of the feeling that comes over a man as he hits a corral fence at branding time with the hot breath of a mad critter blowing down his neck.

Yes, I might tell of any of these or of a dozen or more like them, but I am just going to relate the simple story of a little trip which promised to be as tame as wrangling horses before breakfast, but which in the end proved to be the most exciting experience I have been through, because I could do nothing to help the other fellow. In my other experiences I could and did help myself.

In 1910 Charles H. Adams was District Chief of the Branch of Grazing, with headquarters at Missoula. He had just been newly married, a fact which I thought about pretty hard before the trip was over. Under official orders, Adams and I left camp one morning to check



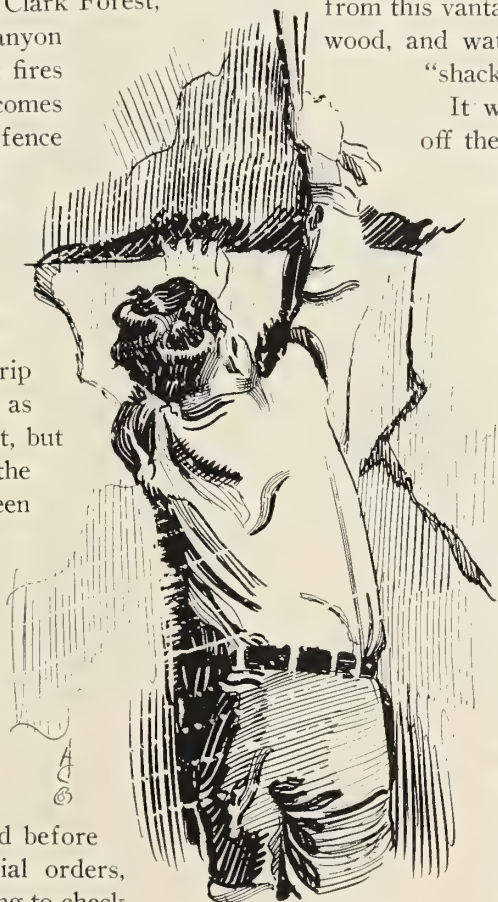
up on the destruction wrought by a large forest fire which had just swept over the Continental Divide from White River on the Flathead to the west fork of the south fork of Sun River on the Lewis and Clark Forest. We set out afoot and in our shirt sleeves to encircle the burned area in so far as it had burned into the Lewis and Clark Forest. A timely snow-storm had put the quietus on the fire and most of the fire-fighters had been discharged some days before.

Accompanied by a large wolf-hound of the Russian variety that insisted upon following, we proceeded until about sun-down, when we found ourselves perched atop the most prominent peak on the Continental Divide, and a long distance from camp. We dotted in on our map sheets the perimeter of the fire, as it appeared from this vantage point; then our thoughts turned to food, wood, and water, for it was evident we would have to "shack out" that night.

It was growing dusk when we decided to get off the peak by the shortest route. The sky was clouding up, and it looked as if we were in for a storm. We descended the east side of the Divide, which formed the extreme head of Deer Creek. Adams took the lead, and I never realized until then how far he could step. We had reached a point about half-way down the mountain. Here my leader came to an abrupt stop, which gave me and the dog a chance to catch up.

We had been following a well-defined goat trail on the side of the precipice, which rose some five or six hundred feet, almost sheer, from a timbered basin beneath. It seemed that Nature had not finished this particular trail project, for it came to an end in the face of the cliff. It was nearly dark, and a wet snow was swirling around the mountain and slapping us in the face.

Mr. Adams was thoroughly warmed up to getting off that mountain under existing circumstances, and I pulled up above



him ready to second any motion he might put to bring us to wood, water, and some sort of shelter. He was some ten or twelve feet below me, having slid that distance upon coming to the end of the goat trail in an attempt to stop suddenly. But he could not turn back! He was hanging on by finger tips and the toes of his boots. As mountaineers know, one can sometimes get down a bad place where it is extremely difficult to get back up. This was one of those places. He had gone too far already!

He yelled for me not to attempt to follow; that he could go no farther and did not think he could get back. I was "sitting pretty," as the saying goes, so I began to devise ways and means of assisting him back to my location on the goat trail.

Up to this time we were in fairly good spirits. Having no rope, I removed my buckskin shirt, and by taking a finger-nail hold on an outcropping rock, lowered my body and passed him the shirt-tail. He managed to get hold of it by tiptoeing, but when his weight settled down for a pull his hold slipped off. The shirt, being buckskin, had become very wet and slippery from the wet snow which continued to fall. So was I and so was he.

Right then is when things took a serious turn. We were both becoming chilled by wind and snow. Our teeth were chattering from a combination of exposure to

the driving snow and a growing fear that he might not get off the face of the cliff that night—if at all. I suggested that I go back to camp (some seven or eight miles through rough country, and dark as the inside of a cow) to get a lash rope. He suggested that I would never make it after night, and that he would probably freeze before I could possibly return. If he chilled and lost his hold on the cliff, it meant a fall of some 200 feet into a mass of jagged rocks which had accumulated at the foot of the wall. That meant a horrible death.

I knew that wet buckskin would stretch; so being good and wet, I stretched the shirt, tied a knot in the end of it, and again let it down to the newly married man. This time the sewing of thong gave way—it parted on a splice at the yoke. He had part of the shirt and I held the collar and yoke—fifty-fifty—and he was a lucky man to keep his toe-hold on the cliff during these trial lifts.

We talked of tying our trousers together for a final trial, but agreed that if buckskin and thong would not resist his weight of 175 pounds, cloth and thread probably would not. It was a moment for meditation. I could see he was getting colder every minute, and I know the snowflakes didn't set very well on my spine. It was dark by now, and the wind howling and blowing the snow in swirls around the face of the mountain. The dog began

to whine a doleful tune to add to the horror of the situation. Something had to be done and done quickly. Mr. Adams did it.

Without saying a word, and standing upon the toes of one foot at a time, he took off his shoes and threw them over the cliff into the darkness of the valley below. This was indeed a shaky moment. He repeated the Lord's Prayer fervently, audibly; turned his back to the face of the cliff and jumped! All I heard was a grunt, a groan, a sigh, and the sound of falling bodies—rocks, I hoped—together with the dull, resonant thud as they struck the jagged accumulation of rocks and debris below. It was so dark I could not see what had become of him, and my eyes must have been protruding from their sockets in the effort to see what had happened. My ears were strained for an assuring sound.

It was my turn to chatter the Lord's Prayer, and I did. The dog howled a mournful tune by way of accompaniment. Seconds of time seemed ages—and then a voice out of the darkness below me and to the left:

"I guess I'm all in a bunch, Price!"

Ye gods, those were cheerful words! Even though I was guessing at his new predicament, it was good to know that he still breathed. That was the most thrilling moment of my life.

He had jumped sideways from where he stood and caught hold of a small juniper

which had taken root in a crack in the limestone—of what resistance he knew naught—with benumbed hands; then, by twisting and contorting his body, with his fate in the hands of the roots of that juniper bush, swung himself into another niche in the side of the cliff, which afforded him a place to sit down and regain his composure. That picture should have been "movied."

He yelled for me to come down if I could. Suffice it to say that I did not follow. I went around. And then, by the closest kind of co-operation, we both arrived at the foot of the precipice. I found it necessary to part company with my treacherous hobnailed boots, and I must have been a sight to behold when we got a fire lit in a cave at the base of the mountain, about midnight. Mr. Adams had some raisins in a handkerchief, which tasted mighty good. I slept. He couldn't. The dog could not follow me down, but kept up a noisy patrol of the goat trail above, and our conversation amounted to curses for him. We were not in a conversational mood. I found the shoes, hat, and the part of the shirt I was lacking among the rocks at daylight. I sewed the shirt together with wooden pins, and the tail dragged my tracks out on the way to camp. The dog beat us to camp, and when he saw us coming, ducked his tail and emigrated. He had had enough of our company.

This Story Won the Second Prize

in

American Forestry's Ranger Story Contest

The Problem of the Southern Pine Lands

By J. B. WOODS

TO THE average observant American a first journey through the southern states is a succession of surprises. Some of these surprises are in the nature of disappointments; others are immensely stimulating. Probably the deepest impression is a feeling that of all southern products the most important is pine lumber. When he visits the principal seaports he finds dozens of ships loading pine for Central and South America. At the chief freight transfer points he finds hundreds of box cars, and

train moves out over some long trestle toward higher ground on the other side; for in the overflow country railroads have a way of avoiding low ground; they traverse the fruitful bottom lands usually by the shortest possible routes. Even if the observer were able to study closely the modern agricultural South, he would find a surprising lack of languor, for gasoline tractors and small automobiles have changed farming methods here as elsewhere.



VAST QUANTITIES OF TIMBER ARE BEING LOST IN THE SOUTH AS A RESULT OF INADEQUATE FIRE PROTECTION FOLLOWING TURPENTINING

is told that most of them contain lumber for eastern and northern destinations. As his Pullman crawls through the yards of thriving small cities, he cranes his neck to look about, but the view is obstructed by strings of flat cars piled high with timbers, trade-marked in large stencil patterns with the names of lumber manufacturers.

In nearly every small town there is some sort of sawmill. Larger places are ringed about with tall smokestacks, lumber storage yards, and suburbs of laborers' cottages. Altogether, these things compose a picture of intense dynamic industry. Earlier visions of singing negroes moving leisurely through drowsy cotton fields are obliterated by resinous black smoke and the scream of hungry saws.

Cotton fields there are, to be sure; but in the pine country these great plantations are restricted usually to rich bottom lands, to be seen by the traveler only as his

AFTER THE VIRGIN TIMBER—WHAT?

But during the runs between stations our newcomer does observe certain things which disappoint him sorely and lead him to wonder what is to come next, after the virgin timber has been cut clean. Mile after mile along the railroad he sees denuded lands, cut-over years ago, upon which grow only meager grass and an occasional scrubby tree. Blackened stumps are everywhere, testi-



A SOUTH GEORGIA FARMER WHO HAS PROTECTED HIS FOREST FROM FIRE AND WHO MAKES IT PAY ANNUAL DIVIDENDS IN TURPENTINE AND ROSIN

fying to the ability of Nature in the old days, before man came with his scrub cattle and hogs and fire. But today, against man-made odds, Nature can do but little in the way of reforestation with longleaf pine. She plants five trees per acre where we need five hundred. The traveler learns that these barrens stretch for ten miles on either side of the track, and that beyond stand the last ranks of virgin timber, retreating always before saw and steam-skidder.



VIRGIN PINE FORESTS OF LOUISIANA BEFORE LUMBERING BEGINS



TRANSFORMATION HALF ACCOMPLISHED—VIRGIN TIMBER ON ONE HAND, CUT-OVER LAND ON THE OTHER



THIS PICTURE SHOWS THE VIRGIN PINE FOREST COMPLETELY GONE AND IS EXPRESSIVE OF THE PINELESS LAND PROBLEM OF THE SOUTH

Occasionally the train rolls, without slackening speed, through a deserted village, the remains of some sawmill plant rotting beside the track and clusters of shacks hiding among the weeds. Ten years ago this was a hive of industry. Timber was its life, but the timber is now gone. Ten years hence hundreds of other busy mill towns will have died. In fifteen years most of the large pine mills will have exhausted their reserves of virgin forest, and the lumber industry of this vast region will depend upon small mills, working in scattered tracts of left-over timber and in inferior second-growth stands.

Meanwhile the cut-over area grows—a hundred million acres today, poorly stocked with second growth in some localities, barren in others—and each year adds two million acres or more to the total.

Here, then, is the problem of the cut-over lands. What can be done with them? Must they lie idle until a flood of home-seekers comes to convert them into farms? Is the great industry which for twenty years has dominated the markets of the North and East to be allowed to die out for lack of raw materials? In a region where conditions for growing timber are ideal, new forests should be obtainable upon such lands as are not needed at once for settlement. New forests and new farms—the South needs both—and today's task is to set about developing both in such a manner that the region, the lumberman, and the settler may realize the greatest possible gain.

Forestry in a limited measure, upon non-agricultural lands, is inevitable in the South. There are numerous areas which for one reason or another may be classed as absolute forest soil. To the extent that Nature is able to restock these lands despite man-made obstacles, they will remain under timber, and in the course of time they will become

valuable and will merit the application of forest-management methods. But there is no great consolation in this thought for the softwood-using public, because such limited production will not amount to much in terms of national lumber demand.

USE OF PINE LANDS ESSENTIAL

If the South is to be saved from a serious business depression following the decline of lumber production, some immediate use must be made of the medium quality cut-over pine lands. They are capable of producing farm crops, and of course they are excellent forest soil. The thought often advanced nowadays is that these lands should not be reforested, but should be sold to settlers. If settlement can keep pace with timber-cutting, perhaps this view is good; but if national land hunger is not strong enough to force rapid settlement, then it is possible that the best use of these areas will be the growing of new forests. The area of medium-quality soils is tremendous; probably two-thirds of the total pine acreage should be so classed.

There are two main roads of approach to a solution of this problem: We must study the possibilities of selling these lands for settlement with the aim of forecasting the probable returns from such sales, and we must investigate the lumber market and present timber supply to determine, if possible, what will be the future value of second-growth forests. Lumbermen own the greater portion of these pine lands, and lumbermen are practical folks. If they can sell their cut-over lands promptly for high prices, they will give little thought to timber cultivation, for the risks are considerable and the period of waiting somewhat long. On the other hand, if they become convinced that lands will not move rapidly at fair prices, and that greater ultimate returns can be obtained by growing timber, many of them will become second-growth enthusiasts. The present rising lumber market has impelled many lumbermen to inquire how they can prolong their operations, and at the same time the absence of any appreciable demand for cut-over lands forces them earnestly to ask about ways and means of reforestation, in order that their lands may be put to work.

Reasonable expectation of immigration for the South during the next thirty years does not justify a belief that more than one-fifth of the yellow-pine lands can be sold advantageously prior to 1950. Yet a hundred million acres will be available for sale during that period. So dull is the land market today that a cash offer of five dollars per acre for surface rights would move almost any large tract of cut-over pine lands in the Gulf States. Ten years ago values were only slightly lower. Ten years hence they will not have changed greatly, unless the date happens to mark the crest of one of those periodical land booms. But we are not considering booms, for they come and go, and much of the land that changes hands during booms goes back later to the sellers by default.

"TOO MUCH LAND LYING OUT-OF-DOORS"

Among land-owners there is a common expression that raw land must double in value every ten years, to protect

the owner's investment, due to the accumulation of carrying charges and interest upon money invested. Thus today's five-dollar lands should be worth ten dollars in 1933. This is an appealing thought, but not altogether safe as a basis of business policies. Average values of large tracts probably will show very little appreciation by that date. As one Louisiana lumberman says, "There is too much of that land lying around out-of-doors."



HEADS OF A BIG SOUTHERN LUMBER COMPANY LOOKING OVER THEIR LANDS TO SEE HOW THEY CAN UTILIZE AND APPLY THE IDEAS OF FORESTRY

It is apparent, from the results of a survey made by the Forest Service in 1920, that the southern pine timber supply is nearing its period of rapid exhaustion, unless measures are taken to encourage restocking of all suitable lands with second growth. Meanwhile demand for lumber grows in the North and East, and particularly in the markets of the South. We are told that a lumber famine impends east of the Rockies, because, although there are great stores of timber on the coast, the cost of moving forest products eastward raises prices to unreasonable levels. The difference between transportation costs of lumber from the Pacific coast and lumber from the South into any northern or eastern market amounts to several dollars in favor of the southern producer. This difference assures the latter of profit from the growing of timber in the future.

With respect to local southern demand, it is entirely possible that production will no more than equal consumption in 1933. When a state of balance between demand and supply becomes a fact, the pine lumberman will be in an enviable position—if he owns timber—for he can dispose of his normal output at home and look to northern markets for absorption of his surplus stocks at any time; and, as time goes on, the balance will be overturned and

there will be a lumber famine in the South itself, unless something is done today about growing new forests.

SOUTHERN TIMBER VALUES RISING

Some of the recent timber transactions in the Gulf States are astounding in the matter of price. Ten dollars per thousand feet, log scale, has come to be a common trading figure for virgin pine. During the wild days of 1920 second-growth North Carolina pine attained a level above six dollars per thousand feet. This was a boom level and should not be given great weight, were it not for the fact that timber is a commodity the supply of which is limited. But six-dollar second growth will become familiar to all of us within a few years, because of the market values of lumber which can be made from such material.

Forestry upon non-agricultural lands will not solve the problem of lumber famine in the South, and settlement of all medium quality lands will not occur rapidly enough to solve the cut-over land problem. We see ahead a demand for lands sufficient only to settle the best of pine lands during the next generation—a matter of possibly 20 per cent of the total available pine area—but we see a lumber demand which will pull stumpage values higher and higher. The wise plan for the lumberman, then, is to sell his best lands to settlers as fast as possible, but to reserve his other classes of soil for timber management, in order that they may increase in value by virtue of the timber upon them. After settlers have taken all the best pine lands, the lumberman can liquidate his medium-grade areas, and they will have paid their way meanwhile with a timber crop.

Two main questions remain to be answered: How should the lumberman go about getting new forests started, and what will be their cost to him? He first should modify his logging methods, in order that the least

possible damage may be done to young growth. This is one method of starting new forests. Another is by actual seeding. Fire protection must be provided, and will cost possibly 25 cents per acre per annum, on a large scale. The actual land investment to be added to cost of timber planting should not be over two or three dollars, for the medium-quality lands are not worth more than that in large blocks. As a matter of fact, the lumberman's actual investment in lands usually is nil; he bought them under timber without cost and the lumber income has carried them ever since.

FOREST-GROWING WILL SOLVE LAND PROBLEMS

In thirty years the timber-grower may expect ten or twelve thousand board feet of merchantable timber per acre, which will have cost him less than six dollars per unit, even in face of present-day taxes. Standards of utilization will have changed meanwhile, and his realization certainly will be greater than he now expects. The uncertain elements of appreciation and changed standards cannot be measured, but history in the lumber industry so far has indicated that these are the most potent of all sources of profit; and by judiciously balancing yearly mill-cut with reasonable growth upon his forest lands, the owner can maintain production perpetually, or until press of settlers forces him to yield his lands for conversion into farms. The cut-over pine lands problem can be solved within the next decade by a few hundred lumbermen in a way to benefit the region and themselves. If they do not turn to second growth, their chances of profit from sale of cut-over areas are rather slim, and many owners will be obliged to liquidate their lands by allowing them to revert to the state for taxes in order to stop the accumulation of fruitless expense.

He Will "Carry On"



CALVIN COOLIDGE
30th President of the United States

For The Service of The People

IT IS desired to call the attention of the members of the American Forestry Association to the significance of what President Harding said at Seattle, a few days before his death, reprinted in part on page 514 of this magazine. His statements indicate clearly his conversion to a broad conservation policy in the administration of the vast territory of Alaska, so rich in natural resources. His swift comprehension and broad grasp of the situation and his frank and immediate expression of satisfaction with things as he found them give heart to the followers in the conservation cause.

While he did not live to see them fulfilled, the plans he formulated will undoubtedly find fruition through his successor, for Mr. Coolidge—grief-stricken at hearing of President Harding's death—declared: "He was my chief and my friend. It will be my purpose to carry out the policies which he has begun for the service of the American people, and for their responsibilities wherever they may arise."

Taking the Sky Highway Over the Colorado Rockies

BY STUART L. SWEET

FLYING over the Rockies west of Denver gives a delightful combination of the thrill of flying, the treat of new scenes, and mountain vistas from new angles, and the supreme joy of looking down on the snow-capped peaks and wooded hills of the Continental Divide. There is just enough danger to add a little snap to the trip. With a good motor, a good pilot, and a good ship, one is just as safe as on the highways. On the route of the clouds and the birds there is a new treat in store each second.

Starting one summer morning, when the air was right and the winds favorable, we took such a trip. The photographs printed here show some of the rare scenes upon which we feasted our eyes. If one has the love of photography, as well as the zest for flying, it makes a happy combination, because the marvelous pictures of God's handiwork that are constantly unfolded, as the ship speeds on at one hundred miles an hour, pass by in such a kaleidoscopic way that only a few can be permanently remembered. If you like flying, if you like mountain climbing, if you love the great out-of-doors, and if you appreciate the great works of Nature, I ask you to come with me for a few hours over the snow-capped sentinels west of the "Queen City of the Plains."



THE START

We will leave early in the morning and motor to the big Curtiss-Humphreys Field on the eastern edge of Denver. With our flying togs adjusted and camera safely tucked away, we taxi out into the wind and give ourselves, for the next few hours, to the good pilot and that bit of wood, canvas, and steel—the man-made bird.

Heading straight into the wind, the big motor roars a challenge to the mighty sentinels lifting their rugged heads into the azure blue of the sky. The ground slips away. In a few moments we are



LOOKING DOWN ON THE "QUEEN CITY OF THE PLAINS"

a thousand feet above the beautiful city park with its lakes, boulevards, and floral gardens. Climbing steadily we are soon above the business center of the West.

Heading straight west, we use the paved motor road to Golden as our ground guide. To us, in the sky, it appears like a ribbon on the landscape. On either side are the small farms, truck garden plots, and beautiful country estates. All too soon we are passing over Golden, the gateway to Denver's mountain park system. Below us we can see the State School of Mines, and on the hill directly ahead the big cement "M" built by the mine students. From our position we can appreciate more fully the marvelous engineering ability needed to construct the famous Lookout Mountain Highway. Now below us is tucked away the big game preserves just on the other side of Genesee Mountain. With our glasses we can see buffalo, deer, and elk as they scamper away to the protection of the trees. The roar of the motor frightens them—it's a new and noisy bird to them, but to us the steady bark of the motor is music. The roads of the Mountain Park System wind here and there among the groves of evergreen and aspen. They skirt the cliffs in these hills and come out on the level mesas and plateaus to plunge into other forests of pine and spruce.

Hidden away, down at the right, is the little town of Idaho Springs, in the Clear Creek Valley. At one time this was one of the great mining camps of Colorado. One can see the shaft houses and ore dumps on the hills and the narrow-gauge line of the Colorado and Southern paralleling the river. The motor road below climbs the steep grades, winds its way through the mountain forests to Echo Lake and Mount Evans itself. Our pilot turns west and, with the road as a ground guide, we are soon high above Echo Lake reflecting in its placid surface the spirit of the hills—peace and quietude. Great forests of evergreen and aspen come down to its banks. It is one of Nature's glistening jewels hidden in the mountain forests.

Straight ahead of the nose of the ship is the summit of Mount Evans. Climbing steadily from Denver we have

reached an altitude of 14,000 feet above sea-level and we are still climbing for safety's sake. Beyond, and to the westward, are the snow-capped peaks of the Continental Divide. From our position in the sky, they truly look like the "backbone of the Rockies," as they are frequently called. Glistening emerald lakes tucked here and there reflect the cliffs and mountains that surround them. At the foot of the ragged cliffs on the east side of Mount Evans is Summit Lake. A little below are the rarely seen Chicago lakes. Countless ravines and valleys interlace the mountains with brown and green coverings that blend into the magic coloring of an Oriental rug.

We have invaded the eagles' lair. We have traversed his highway and feasted our eyes on the sights familiar to him. Turning in the cockpit we can look east to the plains that appear to extend like billows of the ocean in undulating waves up and up to meet the horizon. Such a trip above the tops of the mountains is a treat of the rarest kind.

The glistening glaciers of the Arapahoe Peaks beckon us northward. Climbing steadily we parallel the Continental Divide and the good old motor sings its song of triumph. No one can fly for hours without feeling a personal attraction, almost of friendship and companionship, with that dependable block of steel that man has fashioned into a motor to do his bidding. That it can labor on, hour after hour, smoothly but noisily, and pull one safely to 16,000 feet elevation—above these hills—to see such sights, proves the

ingenuity of man's inventive genius.

Our trip is something of a pioneering expedition. Few planes have sailed above the Rockies at this point to look down upon their rugged tops. On the motor alone depends the success of our expedition—in fact, our safety. Unconsciously we listen for its contented bark. As we muse over the steady work of the motor, and are lost in the thoughts of the new scenes afforded so far, the clouds marshal their forces to defeat our further plans. It seems that they have come to the aid of the mountain peaks that have stood supreme in ages past in their sentinel watch over this great state of Colorado. Flying in



THE CONTINENTAL DIVIDE, WITH
BEAVER LAKES DIRECTLY BELOW US

the clouds above these hills is dangerous business. There is little joy in hurtling through space at one hundred miles an hour and seeing a jagged peak stick its rugged face through the clouds just before you.

Only sufficient altitude can pull you over this danger. As we glance anxiously at the altimeter we notice it registers 16,000 feet, which will take us clear of any of the peaks. We dodge in between the cloud banks, climb up over others and dash with full speed ahead in front of these downy balls of mist in the sky to avoid being in something far worse than a London fog.

We are so busy dodging these cloud guardians of the mountains that we have no more than time to steal a glimpse of the glaciers on the sides of the Arapahoe Peaks. With mirror-like reflections they throw back the rays of the sun and almost blind us as we gaze upon them in their lofty homes.

On and on steadily northward we head toward the world-famous Long's Peak, the sentinel supreme of Estes Park, one of America's favorite playgrounds. We have just time to approach it on the east and see in Chasm Lake, at its feet, a

mirrored reflection of the mighty monarch. There is the key-hole through which intrepid mountain climbers wend their way to the summit. Beyond are other peaks, rugged, defiant, but none so high as Long's. There is a granite cliff on the east face that is slightly shadowed by the noon sun, the

rock strata of different colors that add to its beauty and majesty, and melting glaciers that feed Chasm Lake at its base. Below, still further down the mountainside, is Long's Peak Inn, a famous hostelry. In another minute

the peak is obscured by cloud banks. In circling for greater altitude we are fortunate to catch a glimpse of Long's Peak through the clouds. Despite the danger, this sight alone was worth the trip—Long's

Peak towering above a sea of downy mist. Imagine sailing an ocean of snowy whitecaps 12,000 feet above the sea. You are cut off, for the moment, from all sight of the earth. There is only the rugged Peak, and you above the changing sea of mist.

Dodging away from these clouds we sail on northward over Moraine Park. One can see clearly the lateral moraines thrown up in ages past by the great glaciers that swept down from these peaks and wrote their story in lasting form on the earth's surface. Here below us is Estes Park—a national playground. From our height in the skies we can more fully realize all the treats offered the tourist—the winding trails made by the Forest Service—great stretches of aspen trees, forests of

evergreen, hotels, and mountain homes dot the landscape and on all sides the mountains, with their ever-changing colors.

This motorized mountain climbing has gotten into our bones. We want to go on and on. We have sailed above the peaks and above the "backbone of the Rockies." There is one more beauty spot nearby—just over the Continental Divide—well-known

Grand Lake. Let's go!

Heading West from


the village of Estes Park we sail up over Horseshoe Park and the winding north fork of the Big Thompson, a glistening silver ribbon in the grassy meadow below us. Sheep Lake nestles at the foot of Mount Upsilon and




CLIMBING UP OVER A MIGHTY MASS OF MIST. BEAUTIFUL, BUT DANGEROUS TO THE FLYER




LONG'S PEAK EMERGES FROM A CLOUD BANK—TOWERING ABOVE A SEA OF DOWNY MIST



THE THRILL OF
WE SOAR, EAGLE
ALONG



A CLOUDY FILM OF MIST DELICATELY VEILS THE
BEAUTY OF THE LANDSCAPE BELOW, AS WE WING OUR
WAY OVER GRAND LAKE—THE HEADWATERS OF THE
COLORADO

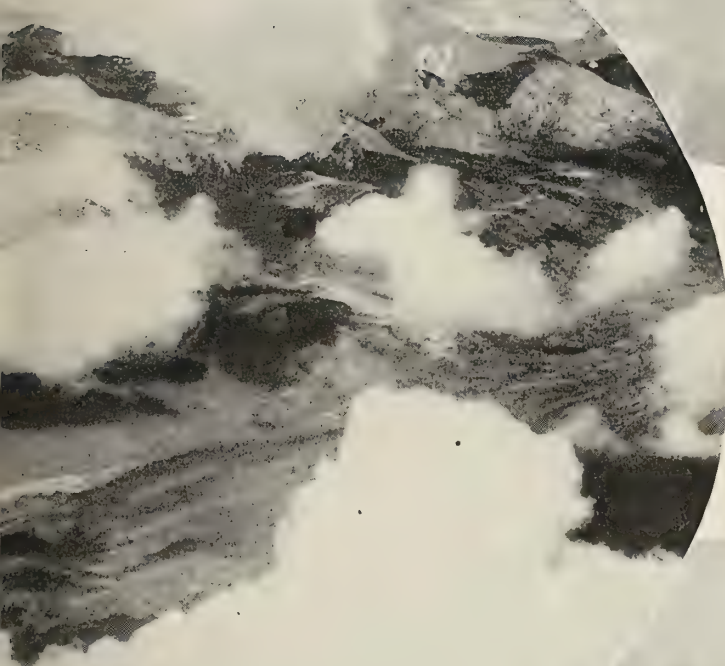


PANORAMA
INDESCRIBIBLE
PAINTED
ON THE
WORLD, S

CLOUD BANKS AS
TO THE HEIGHTS,
HIGHWAY



LOOKING DOWN ON THE MASSIVE GRANDEUR OF
LONG'S PEAK, WITH CHASM LAKE NESTLING AT ITS
BASE, FROM AN ALTITUDE OF 14,000 FEET



URES OF
EAUTY,
CLOUDS
OF THE
BELOW US

THE THRILL OF DODGING CLOUD BANKS AS
WE SOAR, EAGLE-WISE, TO THE HEIGHTS,
ALONG THE SKY HIGHWAY

A CLOUDY FILM OF MIST DELICATELY VEILS THE
BEAUTY OF THE LANDSCAPE BELOW, AS WE WING OUR
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COLORADO

LOOKING DOWN ON THE MASSIVE GRANDEUR OF
LONG'S PEAK, WITH CHASM LAKE NESTLING AT ITS
BASE, FROM AN ALTITUDE OF 14,000 FEET

PANORAMIC PICTURES OF
INDESCRIBABLE BEAUTY,
PAINTED BY THE CLOUDS
ON THE ROOF OF THE
WORLD, STRETCH BELOW US



CLEAR VALLEY, SHOWING THE FAMOUS "LOOKOUT" AUTO ROAD AND THE GREAT CEMENT "M" BUILT BY THE MINE STUDENTS ON THE SIDE OF THE MOUNTAIN

straight west over the pass there is below us the winding Fall River road. We can look down into the great crevasses filled with snow that form the great Greek Upsilon of the mountain bearing that name. Below us are the flat tops of the Pass from Estes Park to Grand Lake. Passing from the eastern to the western slope, over the Continental Divide, separating the waters that flow into the Pacific and into the Atlantic oceans, one is impressed with the sheer steep cliffs that characterize the eastern face of many of the mountains over which we have flown, while west of the Divide the slopes are more gradual, more heavily wooded; streams are larger and more abundant. Soon we see Colorado's largest mountain reservoir—Grand Lake. A little spot of mist in the foreground adds just another touch of beauty to this remarkable scene. Nestled in the mountains, with peaks on three sides and great wooded slopes touching her shores, lies the source of the Colorado River. For years this has been known as the Grand River flowing southward and westward to meet the Green River, there to unite into the Colorado. By an act of Congress this Grand River has been recently renamed the "Colorado"—a fitting tribute to the part played by Colorado in the great irrigation projects of the seven states along its course.

Following the bird paths over the Rockies not only offers scenery beyond compare, but stamps indelibly a new conception of the handiwork of God. There is another side which should not be overlooked in such a trip—the vital part the forests play in the water, lumber, and food supply of this great nation. The forests on these wooded slopes conserve the moisture and distribute it with surprising uniformity during the dry

months of summer and fall. They prevent the floods that do damage to life and property. They furnish homes and protection to the wild beasts and birds. They shelter the dainty flowers and ferns that give added beauty to the hills. It is gratifying to fly over these hills and see the great forests and realize that many of them are, as yet, untouched and that others have the protection of Uncle Sam; still others afford food and shelter for thousands of cattle and sheep that pasture in the National Forests. But here and there are mute testimonials of man's carelessness, or thoughtlessness. Great areas of burned-over timber, with the fallen trees and charred stumps, occur—great scars on the landscape. Intelligent lumbering is necessary and desirable for mankind, but slaughtered timber robs generations yet unborn.

There is a feeling of awe as we fly over the primeval forests and realize they are as yet unmarred by careless human hands. We cannot but appreciate the vital part they play in the life of our nation. A great part of our food supply will always come from the mesas and valleys farther down these streams. Their source of water supply, in turn, comes from the snows on the hillsides of these mountains and this snow is conserved by the forests. A great part of the meat supply of America comes from the inter-mountain states where the forests, themselves, and the grasses and feed of the forests reserves give growth and strength to the cattle grazed there during the summer months.

If you doubt the need of a National Forest Service, or if you question the wisdom of an intelligent forest supervision and conservation policy, I urge you to take any one of the myriad Sky Highways over the Rockies and read in your flight the story unfolded on the face of the earth below.

BIERSTADT LAKE, LYING IN THE DENSE TIMBER IN ESTES PARK—A NATIONAL PLAYGROUND



In Behalf of Our Waterfowl

BY CARLOS AVERY

IN ALL our endeavors to arrest the depletion of wild animal life, there has been a tendency to magnify the relatively unimportant and overlook the essentials. We have heretofore relied upon regulations and restrictions, while the forces of destruction were devastating the forests, poisoning the streams, and drying up the lakes and marshes without let or hindrance.

Preservation of the natural habitat of wild life is fundamental to its continued existence. Pure waters are necessary to fish life, forests are essential to big game, and lakes and marshes must be retained as



effective in this country. Great as has

been the beneficial result of this federal act and its resultant outlawing of spring shooting, the marketing of game, and in restriction of bag limits, it is but the first step and will not prove permanently effective unless the next logical step is taken, and that soon, to save some of the remaining nesting and feeding areas as yet undrained.

It is asserted in many quarters that marked increase in waterfowl has followed enactment of laws for federal protection, and this increase doubtless has occurred in some localities; but in others it may be more apparent than real, as reduction of the breeding areas has concentrated the birds into smaller spaces, giving

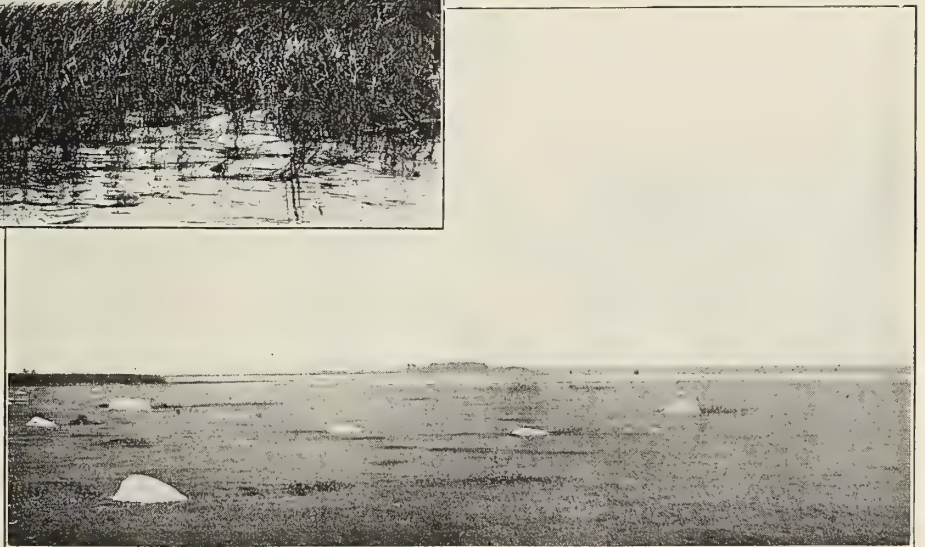


BEFORE

Mud Lake, in northern Minnesota, as it looked in 1901, when it was the breeding area of millions of waterfowl and shore birds.

nesting and feeding grounds for waterfowl.

The first great and effective step ever taken to check the rapid depletion of waterfowl, except isolated instances by states and provinces, was the consummation of the Migratory Bird Treaty with Great Britain and the act of Congress making the treaty



Photographs by courtesy of Zoological Museum, University of Minnesota

AND AFTER DRAINAGE

Mud Lake was drained in 1914, and this picture shows the character of "agricultural land" (?) uncovered by drainage. Vast areas in northern Minnesota have been ruined for birds by drainage projects, which have also all but ruined the farmers.



Photographs by courtesy of Minnesota Forest Service and the Zoological Museum of the University of Minnesota

REPLACED WATER WITH FIRE

Upper—A typical northern Minnesota drainage ditch, which in many cases have destroyed water reservoirs without compensating benefits, increased fire hazards, and exterminated thousands of waterfowl.

Middle—Minnesota fire-fighters combating with mechanical equipment a peat fire on the grade of a ditch.

Lower—Fire starting in the peat which underlays some of the drained areas is most difficult to extinguish, and, as shown by this picture, sometimes burns through the winter.

the appearance of a larger number, when in fact the total may be growing less.

The record of the past four years in Minnesota does not bear out the claim of any substantial increase in ducks, but, on the contrary, indicates a steady decrease, except for an upward spurt last year. It is admitted that these figures are not conclusive, though they are very significant as applied to the Upper Mississippi Valley, and it should be kept in mind that the figures here given of the kill of waterfowl in Minnesota are not mere guesses, but are compiled from the actual reports of hunters, being required by law. The figures for 1922 are tentative and subject to revision. Waterfowl shot in this state include not only the local bred birds, but also an annual flight from western Canada.

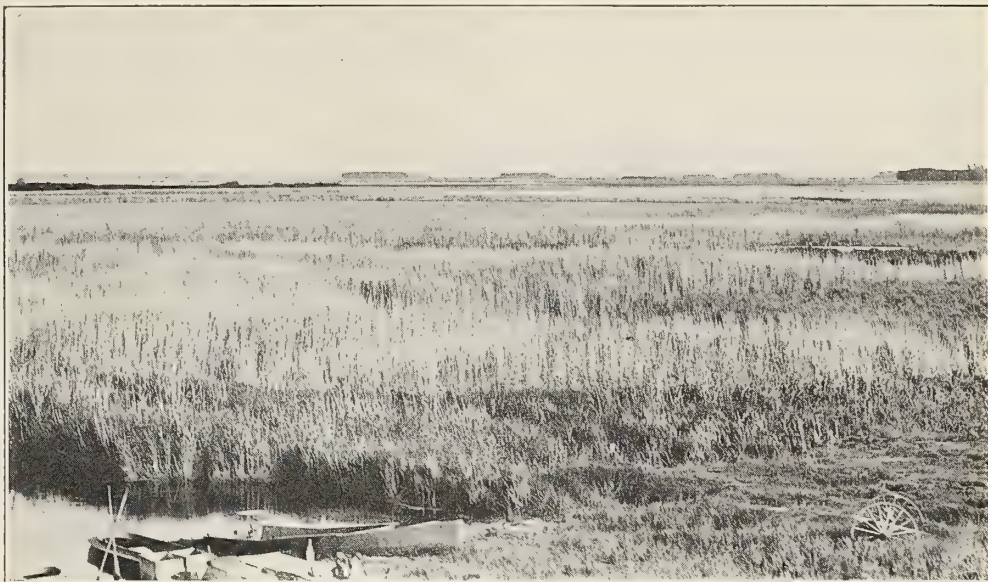
	Ducks.	Geese.	Coots and shore birds.
1919-----	1,804,900	2,350	316,000
1920-----	1,414,889	1,880	152,762
1921-----	1,041,245	2,198	163,411
1922-----	1,408,572	2,480	174,925

For the purposes of this article it will be unnecessary to discuss the merits of drainage as related to agriculture. It goes without saying that much of the ditching off of water has been inevitable and beneficial, but much has been of questionable value and has caused enormous taxes and assessments without compensating benefits. It might be suggested also that there is no crying necessity for the creation of more arable lands while so many acres requiring no drainage lie idle and untilled. Let us use the lands available for farming before undertaking the enormous and questionable expense of draining more duck-breeding areas.

The waterfowl remaining in this country, at best, constitute but a pitiful remnant of the vast myriads existing in primitive times, and our utmost endeavors cannot do much more than re-

tain that remnant. Where now are thousands of square miles of waving grain were once the homes of a multitude of feathered inhabitants. To quote Dr. Roberts in "The Water Birds of Minnesota, Past and Present":

"The diversified and fertile uplands and the equally varied and bountiful waters supported a bird population that astonished and tested the descriptive powers of the early narrators. Ducks of many species bred in vast numbers and rose in dense clouds before the voyageurs' canoes. The honk of the Canada goose resounded far and wide throughout the summer months and legions of waxies, speckle-bellies, and blue geese passed to and fro spring and fall. The prairies in the nesting season were alive with upland plover, great sickle-billed curlews, willets, the beautiful avocet and countless thousands of great, noisy marbled godwits, while as migrants came an innumerable host of other shore birds, conspicuous among which were great flocks of golden and black-bellied plovers and Eskimo curlews. About the margins of the many shallow lakes, majestic trumpeter swans reared their young and big flocks of whistling swans settled on the open waters to rest and feed on their long flights to and from the far Northland. Great snow-white whooping cranes and thousands of more sombre-hued sandhill cranes built their



Photograph by courtesy of the Zoological Museum, University of Minnesota

SHALL IT BE DRAINED?

A typical view of Heron Lake, Minnesota, a famous canvas-back resort. Despite the fact that cut-over land in Minnesota is already a generation ahead of land settlement, it is now proposed to drain this mecca of wild ducks.

huge nests in the marshes, paraded and danced in stately fashion on the prairie upland, or trumpeted loudly from on high. Vast flocks of passenger pigeons obscured the sun and filled the woodlands with their noisy roostings and their eager scramble for the fallen acorns."

North Dakota was almost as wonderful a resort for water birds as late as 1890.

This vast horde has been swept from the uplands and marshes of the upper Mississippi states by the advent of farming and drainage. To enumerate the instances of extinction of hosts of waterfowl by this means would involve a vast amount of investigation and inquiry, but a number of specific instances will suffice to suggest the magnitude of the whole sad story of extermination.

The smaller sloughs and marshes which originally abounded all over southern Minnesota, once harboring each its quota of teal, mallard, shoveler, pintail, and ruddy, have practically all disappeared. Only those connected with larger lakes and on the same level as the lakes remain. Numerous large marshy meandered lakes have also been drained. Among these were those once great waterfowl resorts of northwestern Minnesota, the home of countless Canada geese, as well as ducks—Thief, Mud, and Rosseau Lakes.

Great drainage projects—state, judicial, and county—costing millions of dollars, have ruined



Photograph by A. A. Allen

THE FIRST SWIM

The camera has here given us an intimate glimpse into the marsh home of a pied-billed grebe. When such marshes are drained and subjected to fire, the homing grounds of our waterfowl are gone.

these areas for birds and have all but bankrupted the farmers as well, owing to excessive costs and resulting burdensome liens on the lands. Where in early days, before the outlawing of market hunting, geese and ducks were shot and shipped in carload lots, scarcely a straggler remains. In fact, beyond a few scattered pairs here and there, the Canada goose no longer breeds in Minnesota.

The same thing has happened to smaller areas in practically every county in the state.

Some projects have been arrested by concerted effort of the State Game Department and sportsmen's clubs, but the menace constantly threatens the remaining waterfowl resorts of the state. Among the lakes saved in this way is Rice Lake, Aitkin County, one of the largest wild-rice bodies in the state.

Swan Lake, Nicollet County, a nesting place for hundreds of thousands of teal, is now approaching the climax of years of litigation, involving the expenditure of many thousands of dollars, in an attempt to lower its waters. The fate of the lake hangs in the balance.

Heron Lake, Jackson County, a famous resort for canvas-back and redheads, is now threatened by a project which seeks to buy up the riparian rights of shore owners and convert this great wild celery area into sugar-beet or hay fields.

Even the United States Government, seeking to undo with one hand what it accomplishes with the other, is encouraging projects to dike and drain the nesting and feeding areas of the Mississippi bottoms.

North Dakota has straightened and drained the Mouse River. For results witness Commissioner Judd:

"Previous to this time (1911) this locality—the north and western part of Bottineau County—was the summer habitat of countless numbers of all species of ducks, geese, and other waterfowl that naturally breed within our state. This opening up of the channel of the Mouse River was for the purpose of draining the lower lands in the valley with the expectation that it would make land that could be cultivated. The effect has been that it spoiled the breeding grounds of the waterfowl; that the reclaimed land has amounted to nothing as farming land; and that the expense of widening and opening this channel has ruined most of the farmers who own land adjacent to the

project. At the present time it is safe to say that not 1 per cent of the original number of ducks and other waterfowl are to be found there, either during the breeding or hunting season.

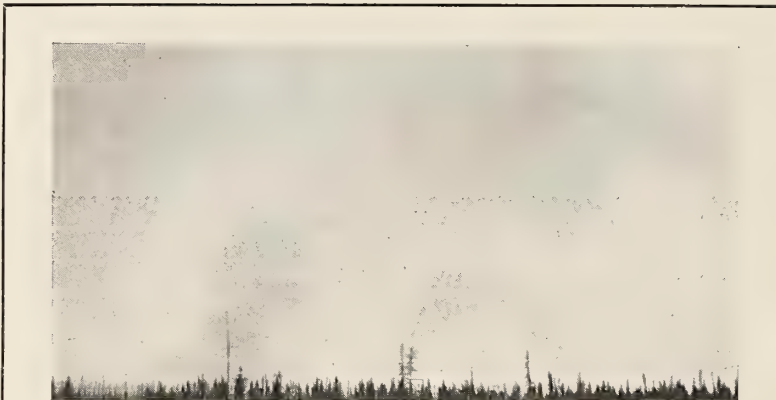
"Another instance is a small area, mostly of alkali formation, in the northeastern part of Walsh County, which used to be in the early days a very mecca for the

waterfowl and was known by hundreds all over the northeastern part of our state, has now become but a small body of alkali water, the bed of the lake producing nothing but coarse, grassy weeds."

Missouri lies south of the great duck-nesting area, except as to wood-duck, but drainage has spoiled vast areas of shooting grounds. Hon. Clark McAdam is authority for the statement that areas so drained and destroyed are vast. He says:

"Drainage has played havoc with the breeding and shooting grounds of Missouri. I imagine there is no other state

where it has played havoc with these things upon such a scale. This is because in southeastern Missouri we have the sunken lands, all of which were more or less under water until the great drainage projects began a few years ago. In New Madrid County I have hunted quail over a vast region entirely reclaimed by drainage. The chief duck-shooting ground of St. Louis was formerly down there. It has been almost abandoned by hunters. Drainage continues here without abatement. We hold our shooting marshes only by buying them and controlling the acreage in drainage districts. Very few are left, and I do not know whether or not these can be held permanently. Likely some of them can. In the region about St. Louis, on both sides of the river, drainage has done away with thousands of acres of marshes. Between the Missouri and Mississippi rivers, in St. Charles County, we have an excellent duck-breeding country, and fortunately the best marshes in there are owned by hunters. My own club owns the Marais Temps Claire, where ducks are breeding in considerable numbers since spring shooting declined. It would be speculation to say how many acres of marsh and swamp have been drained in Missouri, but the whole area cannot be less than hundreds of square miles, perhaps a thousand square miles. Virtually whole counties in southeast Missouri have been reclaimed."



BURNING OUT THE PINTAILS

Distant view of a forest fire burning in a drained spruce area north of Red Lake, Minnesota, known as the best pintail grouse country in the state. "One thing in connection with the fires in this territory last spring, which may be of interest," writes Mr. A. E. Pimley, assistant in charge of fire protection of the Minnesota Forest Service, "is the fact that one of the patrolmen while crossing a section of the burned area counted fifty pintail grouse nests which had been destroyed by the fire. This condition is typical of a large per cent of the entire territory covered by the spring fires. Partridges are also quite numerous on the islands within the peat bogs and they suffer in the same way. And it is not uncommon for the fire-fighters to carry out little fawns. On several occasions they were compelled to kill large deer to put them out of their misery, after having had their feet burned off."

Hon. William J. Stratton, chief game and fish warden of Illinois, reports that:

"The draining of several lakes along the Illinois River in the vicinity of Havana and Beardstown, notably Thompson Lake, which was one of the largest inland lakes in Illinois, has interfered a great deal in the feeding, breeding, and resting places of the ducks and other waterfowl in this state.

"There are only a few lakes now left along the Illinois River. Six large lakes were drained last year in the vicinity of Liverpool and Havana. If the draining of these lakes continues, we will soon have no breeding grounds left besides those along the Mississippi River."

It is only by feeding and baiting on certain grounds along the Illinois River that the clubs retain any shooting during the fall flight. Wisconsin lost her famous Horicon marsh through the efforts of drainage promoters, and gained a useless waste.

Iowa is taking steps to restore water to some of her drained lands to repair the damage done. South Dakota is creating lakes by sinking artesian wells and damming up the waters released from the bowels of the earth. Other states have suffered loss of great waterfowl resorts, and in fact practically every state can furnish its chapter in the doleful story of destruction. One of the most important instances is the drainage of the great Kankakee marshes of Indiana, an area fifty miles long and from five to ten miles wide. Persistent effort and the expenditure of vast sums of money, extending over the past forty years, has converted one of the most famous ducking areas in America into so-called agricultural lands of doubtful value.

What is the remedy? The question suggests the answer. Manifestly, in arresting the drainage of waterfowl nesting areas and in the restoration of such as have been drained with disappointing results. This cannot be accomplished by individuals, corporations, or conservation associations except to a limited extent and in isolated instances. It is a government function, but it would be futile to depend upon the several states for action. A few, as Iowa, for instance, would comprehend the situation and its importance and make adequate financial provision; but the great majority would not. It is manifestly a function of the Federal Government, and legislation

proposed, but not passed, in the last Congress has pointed the way.

Furthermore, the inauguration of a policy of conservation of water and marsh areas involves numerous problems other than the impounding of the water itself. It is not enough merely to provide the physical reservoirs. Some water areas do not serve the purpose of sustaining and encouraging a waterfowl population, solely for the reason that they do not afford a sufficient variety or supply of attractive foods. Others which might serve as nesting areas, and thus increase the bird population, lack cover or other attractiveness and are consequently barren.

The principle of sanctuary must be applied. It has been proven by experience that, when unmolested, ducks return to and occupy their natural haunts. Immunity during the breeding season has accomplished much, and practical management, which would maintain permanent refuges where ducks might enjoy safety at all times, would insure a continuous supply of brood stock.

Control of certain predatory species, necessary to the best results at nesting time, is a detail of any adequate plan for administration of government-owned breeding areas that would naturally be provided for.

A complete and thorough biological survey should be

made of all present and prospective breeding and shooting areas, to be followed by a permanent plan for each, for development by planting and care. In other words, the waterfowl crop should be scientifically and intensively cultivated.

The Federal Government is equipped to do this. The states are not.

The Public Shooting Ground-Game Refuge Bill, which met defeat in the last Congress and which will



Photograph by courtesy of the United States Forest Service

POTENTIAL GAME

But it ceases to be potential when fire sweeps over the nest and puts an untimely end to what would later be a covey of blue grouse and fair game to the sportsman.

again be offered in the next Congress, provides the needed authority, machinery, and funds to enter upon a plan for conservation of water and marsh areas, national in scope and of a permanent character. It is, moreover, the only practical and workable plan that has ever been proposed for this purpose.

EDITOR'S NOTE.—This is the second of a series of articles dealing with what is happening to our wildfowl and the need of prompt legislation providing public shooting grounds and game refuges. The third article, "The Destruction of Waterfowl in the West," by Major Allan Brooks, will appear in the October number.

"Little Chiquinas and Fire"

BY CONSTANCE T. MAINWARING

Winner of Second Prize in American Forestry's Story Contest, "The Forest Ranger's Wife"

THERE have been so many exciting adventures during the years that I have been married to a Forest Ranger that it is hard to pick out any one as the most thrilling.

We have lived in several Forests, but I had my most interesting experiences in the early days in the Sierra Forest, when it was still a reserve and we were fighting sheepmen and trying to educate a very rebellious and narrow-minded public to the idea of public Forests.

Our cabin was perched on Pine Ridge, just above Dunlap, in Fresno County. From our back windows, on a clear day, we could see across the valley to the Coast Range; from our front we could see the Kings River Cañon Mountains.

It was a hot, dusty day in late September. The haze hung heavy over the San Joaquin Valley and we were longing for rain so that there would be less danger of fire. My husband had been on a trip, further back in the mountains, for over a week, and we were looking for him home any minute.

"Say, mother, let's go out on Sampson Mountain. Maybe father will come home that way.

He said he was going to call in on those miners on his way home from Crown Mountain," said Charlie, my nine-year-old son.

"All right," I answered. "Get the horses and I'll fix a lunch and get the babies ready."

It wasn't long before the lunch was ready. Charlie and Pink rode Paddy and I rode Colleen, with three-months-old Dan slung in a shawl and Bobs, the two-year-old, in front of me. Colleen was too young to enjoy babies, and it was fun trying to get into the saddle with Dan and the shawl; but I finally managed it and at last we were off up the trail. About a mile from our cabin was the brow of the mountain which looked down on Sampson Flat, where my father and aunt lived. Charlie and Pink wanted to go down to grandpa's, but I refused because I felt my husband would surely be home early that evening. So we went on up the ridge. The trail ran along the backbone of the ridge, sometimes on one side and sometimes the other. Always on the look-

out, Charlie spied a smoke curling up through the timber on the east side of the ridge, just below the top of the mountain, this side of the mine. We watched it and it grew denser. "It's a fire and will soon be a big one," I thought to myself, and wondered what on earth I should do, for in those days there were no 'phones and ten and twenty miles lay between neighbors. The fire could run down the mountain



A HOME IN THE WILDERNESS ON BEAUTIFUL SAMPSON MOUNTAIN



OUR FIRST CABIN—IN 1896. THE FOUR CHILDREN WERE BORN HERE

and clear across the Flat before I could get a crew of men.

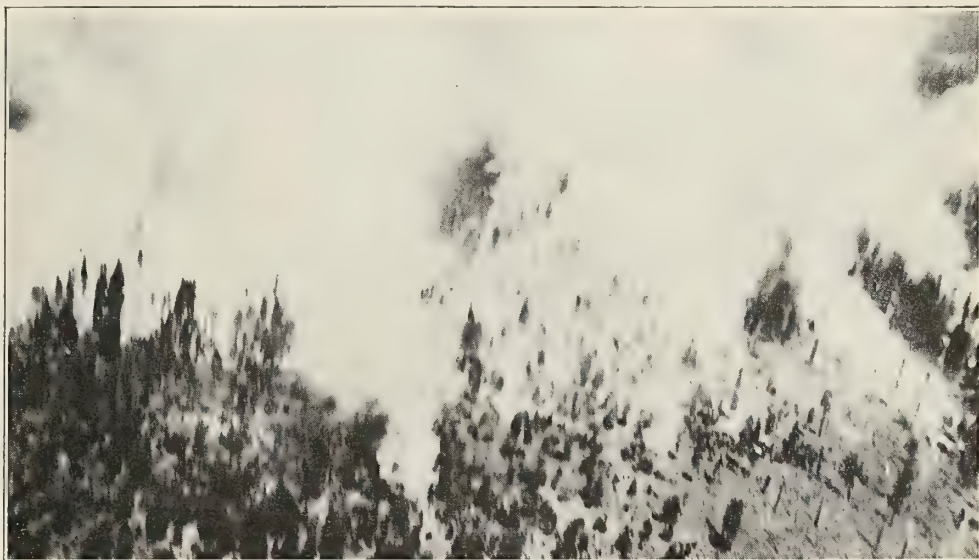
"Charlie, I'll go to the mine for help. You take the kiddies home"—an order greeted by wails from the younger ones. But Charles hadn't been born a Ranger's son for nothing. I slung Dan over his shoulder. Old Paddy knew what precious freight he carried—Bobs behind Charlie and Pink holding Bobs.

"Now, if I don't get home feed Dannie on condensed milk—mix it with warm water. Cook some eggs for yourselves and eat all the pudding if you want to."

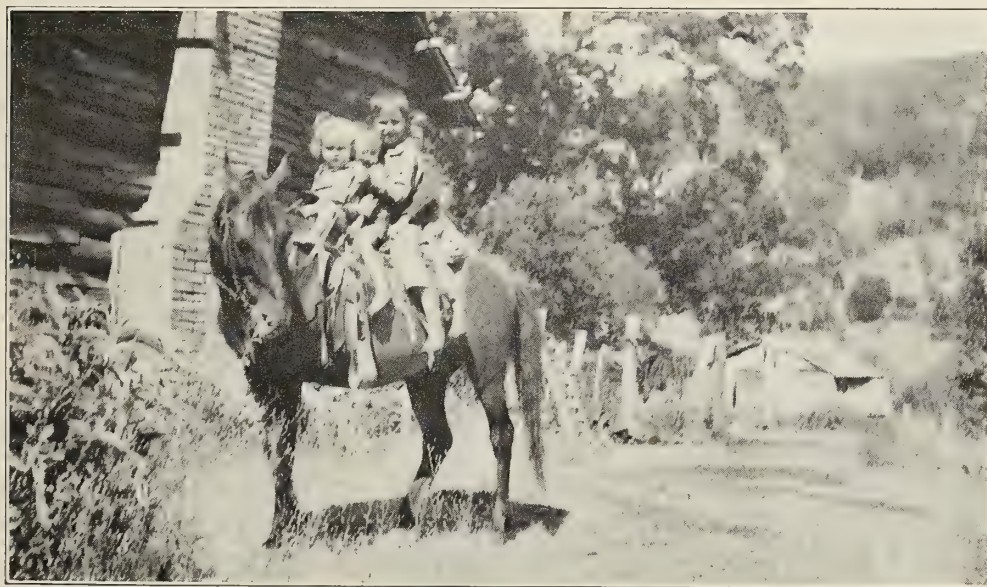
I watched them down the trail. We were only a short way from home and Charlie was equal to anything. Then, on to the fire, which was now beginning to blaze. Colleen galloped along, glad to be rid of the babies. It is a long trail to Sampson mine, but I was soon descending to the miners' cabin, which was half a mile from the top. The miners, two of them, were eating lunch when I burst in on them—a very

We took shovels and an ax. The fire was in a deep gulch and seemed to be running both north and south.

Just as we were about to start, my husband, having sighted the fire on his way home, rode up and, asking a few questions, turned to me. "Ride down to White Deer and get Mr. Akers and any of the men he has down there; we will need help. Then go back to Jim Young and get



QUICK ACTION WAS NECESSARY. WITH A GOOD START AND THE RIGHT WIND I WAS AFRAID THE FIRE WOULD RUN DOWN THE MOUNTAIN AND CLEAR ACROSS THE FLAT



PADDY—CARRYING A HAPPY, LAUGHING LOAD OF PRICELESS FREIGHT AND FULLY SENSING HER SERIOUS RESPONSIBILITY

wild, breathless young woman. "There's a fire started about two miles south, just above the Coffee cabin."

"Why, I jus' come from there," said the younger man.

"Were you smoking?" I asked.

"Yep," answered he, and I saw the older man kick him under the table.

"Well, come on; we have got to put that fire out."

"What in hell fer?" asked the two amazed miners.

"By order of the United States"—this very grandly. "Come along."

him to bring out some more men if he can find them. Tell him to stop at our cabin and bring lunch for us all. Got bread baked, Con?"

"Six loaves."

"All right; ride!" Never a kiss or how or where are the children. What did it matter; timber was burning up—virgin forest that had never been touched by ax, so thick and wonderful. I loved that yellow-pine forest on Sampson Mountain.

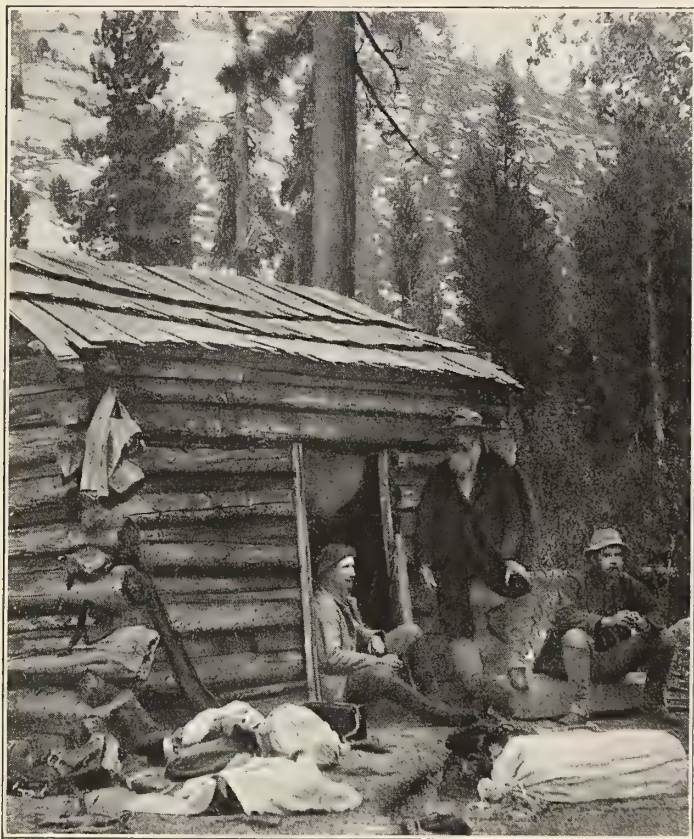
Up to the top of the mountain Colleen and I raced. I'd never been to White Deer, but I knew where it was. The trail follows the ridge about two miles and then branches, one to the river

and the other to Akers' ranch. I never found the branch. Whew, what a ride! Brush almost impenetrable, slick rocks where Colleen and I slid. I had on a calico dress when I started, but I came back in a threadbare pair of bloomers, torn stockings, and the remains of the dress sleeves, looking more like an escaped lunatic than the mother of four children. Mr. Akers met me at the door of his cabin and I told him my errand hurriedly.

"How ever did you come?" he asked. I pointed up the mountain, and he told the tale for years after how

Con—for every one called me Con—came down the mountain where a cow couldn't get through.

I went back with Mr. Akers and his three cowboys. They carried some food with them, as the Government didn't feed fire-fighters in those days. Rangers, out of their sixty dollars a month, fed everybody that came along, from the Supervisor and inspectors to the men after permits to cut cedar stakes. Rangers donated all their canned



"THOSE DEAR OLD MOUNTAIN MEN, WHO WOULD SHARE THEIR LAST CRUST WITH YOU, CHEERFULLY BURN UP THE WHOLE COUNTRY SO THEY WOULD HAVE GOOD FEED FOR THEIR CATTLE, AND THEN JUST AS CHEERFULLY HELP TO PUT IT OUT"

goods that had taken them a week to haul from Fresno; but we never begrudged it; we loved our work and accepted the hardships that came with it. I left Mr. Akers and his men above the Sampson mine, for Colleen was worn out and footsore and I was walking by now. It was 6 o'clock, and I was thinking of little Dan and wondering if all the three were crying while Charlie was trying to comfort them. "Dear little Charlie, always so obedient," I mused. I never stopped at our cabin, which was off the main trail. Leaving Colleen in the pasture, I cut across to Jim Young's cabin, about a mile from us. He was home, luckily, and with two other men, eating supper. I explained my errand, and here again was met with good will. God bless those dear old mountain men. They would share their last crust with you, cheerfully burn the whole country up so they would have good feed for their cattle, and then just as cheerfully help to put it out.

"I'll have some grub put up when you pass the house,

Jim." I could hardly walk back the dark old trail home. The house was dark and very quiet. "All the kids must be in bed," I soliloquized. "Good old Charlie," and the tears oozed—I was so tired. I opened the door carefully, for I realized that Charlie must have had a hard struggle to get the kiddies to sleep. Creeping to the table, I lit the lamp. Where was Judy, the collie? I heard Colleen nicker for Paddy in the pasture, but guessed Charlie had put Paddy in the barn. The lamp was alight. I went to the bed-room and over to the bed. My God! No babies!

"Oh, my babies, my babies, where are they?" I screamed, rushing into the sitting-room, frantically calling. Out of the house I ran, and up to the barn, still screaming and calling. Jim, with his cowboys, on his way to the fire, came by just then, and he told me he would find the youngsters. "They're all right," he assured me. "But I was crazy to leave them," I cried. "Darn the old Forest. Why didn't I let it burn?" The men were gazing at me—a wild woman with her hair streaming, rags of clothes hanging around her, crying madly. We hunted back to where I had left them in the morning, and then Jim, with a lantern, back-tracked, but it was awfully dark and we could find no clear tracks. We could see the fire spreading further along the mountain, but not so fierce now, as the wind had died down. I knew the men were putting in their best licks making a fire-break. The three men went on to the fire with a message to Ed that all his family were lost.

"Con, I bet they went to the Flat," said Jim.

"Charlie wouldn't. He always minds me."

"Well, let's go down and see." I was riding Jim's horse. We decided to try the Flat. It was nearly 9 o'clock, I guess, though we hadn't a watch. When we got to the Bench the Flat lay below us about 2,000 feet. I could make grandpa hear by giving the Australian "coo-ee," and you can bet it echoed down the valley. "Coo-ee, coo-ee," came the answering call.

"He is awake and watching the fire—afraid it will burn him out," said Jim. "Come, let's go down." We rode double and it took nearly an hour to reach the ranch. I was all in from crying and my long rough trips that day, but grandpa's arms were ready and Aunt Lucy had a cup of hot tea in a moment. Best of all, there were the babies! "I tried to quiet Dan," sobbed Charlie, "but he cried and cried and wouldn't eat, and I thought he'd starve. Bobs and Pink cried, too; so I just saddled Paddy again and we came down to Aunt Lucy. I left two sticks crossed on the porch, so you'd know I'd gone to grandpa's." Reproaches were not in order—only gratitude that they were safe. Ed turned up before morning, almost crazy with anxiety, to learn, too, that we were all safe. Within a few hours the fire was gotten under control and the forest cover on beautiful Sampson Mountain saved.

Difference Is Real

The difference between fire controlled and fire out, says Ranger Hank, is the difference between hanging on to the calf's tail and having him in the corral.



AN ABANDONED CAMP OF GUANO COLLECTORS ON LAYSAN ISLAND

Reforesting Desert Islands

By C. S. JUDD

BRINGING back vegetation on the low sand islands to the west of the better-known volcanic islands of the Hawaiian group has its many interesting angles.

A splendid opportunity has been offered lately to do some much-needed reforestation on these islands of the Federal bird reservation by means of the scientific expedition which is being conducted by the Biological Survey in close co-operation with the Bernice P. Bishop Museum of Honolulu and the United States Navy. The latter has placed the U. S. S. *Tanager*—a 1,000-ton minesweeper—at the disposal of the expedition, and this sturdy boat, under Lieutenant Commander S. W. King, is now on its second voyage of investigation.

Besides the collecting of bird specimens and the study of animals by Dr. Alexander Wetmore, who came out from Washington, D. C., to conduct the expedition, the islands, reefs, and sea bottoms are being given a search for everything of scientific interest which they may yield, and the work is being done so thoroughly that it is hoped it will not be necessary to conduct a similar expedition for the next 25 or 50 years.

One of the special duties of the Biological Survey men

is to exterminate the rabbits which were unfortunately taken to Laysan and other islands. Multiplying in large numbers they have simply overrun the lands, much to the detriment of the vegetation and bird life. Because of the vegetation destroyed, nesting place for the myriad of wild fowl is much depleted. In fact, the overpopulation of birds has led them to the practice of building their nests in tiers in the bushes in much the same plan as that of modern tenements.

This damage by the rabbits is far-reaching. Not only has the vegetation disappeared as a result of their direct

ravenous feeding, but its lack has exposed the ground to the direct sweep of the winds and the sands have been drifted about and have overwhelmed the cover so necessary for the domestic life of the birds.

When this condition was discovered on Laysan Island by the scientists on the first expedition, a hurry-up call

was sent by wireless to Honolulu to have ready for the second trip to the island a quantity of seeds of trees and shrubs which would grow on these depleted barrens.

The Board of Agriculture and Forestry immediately sent out rangers to collect whatever was available, and



A SAILOR FROM THE U. S. S. "TANAGER" EXAMINING A RED-TAILED TROPIC BIRD IN THE ONLY COCOANUT GROVE ON LONELY LAYSAN ISLE

when the *Tanager* sailed back to Laysan on May 11, 1923, she carried in her hold a large quantity of seeds, seedlings, and cuttings of a variety of shore-loving shrubs and trees, among which were seeds of the Hawaiian *kamani*, *barringtonia*, and *milo*

and the *castuarina* accustomed to grow well in the sand, seeds of the Fiji fan-palm, the aggressive *leucaena* shrub, logwood, and the beach magnolia or *scaevola*, seeds of the



GONIES HOVERING ABOUT THE REMAINS OF VEGETATION ON LAYSAN ISLAND—NOW ALMOST COMPLETELY DESTROYED BY RABBITS

beach morning glory, and seedlings, seed, and slips of the rambling *hibiscus* hau.

The members of this second expedition have already begun the reforestation of Laysan and adjacent islands by planting this material and have been regaled in their work by

living high on seal's liver, shark and turtle steak, the breasts of frigate birds, albatross and other large birds and many kinds of fish, which had been killed for specimen purposes.

A Grizzly Bear Turns Burglar

BY CYRIL N. MCGILLIS

THE last dude had departed. The tourist's season was over and the large, modern Many Glacier Hotel in the heart of Glacier National Park was closed for the long winter months. The doors and windows had been heavily barred with wooden shutters.

Mr. Gunderson and myself had moved into one of the chalets. We remained at Many Glacier Hotel during the winter, acting as caretakers, and going over the mechanical equipment to have everything in readiness for the following season.

On this particular day, while going through the two-hundred-and-fifty-room hotel, I noticed that everything was not as it should be. The main kitchen door was open and it did not take a Sherlock Holmes to see how it had been opened.

Another bear had turned bandit. He had torn the heavy wooden shutters from the door. By pressing his weight against the double doors he had broken the Yale lock and gained entrance.

He had entered the large meat refrigerator, getting away with two slabs of bacon and a ham. Not being satisfied thus far with his meal, he reached up nine feet and tore all the shelves from one side of the wall.

In the refrigerator Mr. Bear got mixed up with a fifty-pound can of lard. So it was an easy matter to track him on the newly painted kitchen floor. He had covered the entire kitchen, throwing the stacks of neatly piled dishes upon the floor, breaking and mixing them with

pots, pans, and kettles that were put away for the winter.

From the kitchen he passed through a twenty-foot hall, opened a swinging door and entered the cafeteria where the one hundred and fifty employees are fed. Here he found sacks of sugar and flour, cardboard lunch baskets, and other store supplies. He scattered these about the room and did a good job of mixing several sacks of flour and sugar over the entire floor.

From the tracks in the flour and sugar it was apparent Mr. Bear could not find his way out of the cafeteria. The swinging door through which he entered was closed. He had gone from one window to another, breaking twenty panes of glass and tearing the sash and frames from the building. He had scattered the chairs and tables that had been neatly piled in one corner of the room.

The hotel is built on a side hill, so that the cafeteria windows are fifteen feet from the ground.

The last window showed how he made his exit. He went through this and carried the sash with him, fifteen feet to the ground below. He left blood stains on the window sills and floor, showing that he had been cut during his rampage.

The bear here in Glacier Park are protected the year around, as are all other animals, except wolf and mountain lion. However, occasionally one goes on the war path and to protect life and property some one must accept the challenge. In this case the pleasure was all mine.

Our experience has been that once a bear gets a taste

of the inside he is sure to come back for more. That night Mr. Gunderson and I figured on being ready for him. About 7 o'clock we went over to the hotel, thinking Mr. Bear would probably return later in the evening. It was a very dark and rainy night, but we thought that by sitting inside the kitchen we could shoot him as he came through the door. Mr. Gunderson had a double-barrel, sixteen-gauge, shotgun, loaded with number six bird-shot, and I had my old thirty-thirty Winchester rifle. Mr. Gunderson was not going to shoot unless I failed to stop him and he got too close.

We walked boldly to the main kitchen door, not thinking the bear would be back so early. I lit a candle to show Gunderson the damage done, and started to the refrig-

the smaller compartments that make up the large kitchen. We could see nothing of Mr. Bear.

The hall leading to the cafeteria was still dark and the switch for these lights was at the other end of the hall.

I threw a scrubbing brush the length of the hall, thinking if he were there he would make a little noise. After waiting for about ten minutes, and not hearing a sound, we decided the bear had left.

As I wanted to show Mr. Gunderson the mess in the cafeteria, I started walking down the hall with "old trusty" under my arm. Well, sir, that old bear stood up in front of me, let out a roar, and began swinging his old gray head from side to side. I had no time to notice any cold chills, or prickly heat, nor did I have time to drop my



Photograph by R. E. Marble

THE INGLORIOUS END OF THE HUGE GRIZZLY. HIS SWEET TOOTH PROVED HIS UNDOING

erator, when we heard the old fellow coming through broken dishes and cooking utensils from the other end of the kitchen. He collided with some trucks that are used to convey dishes. We managed to beat him to the outside door, as we figured he had too great an advantage in the dark. In this case, possession was more than nine-tenths.

From the hotel we went to the hydro-electric plant, started the plant and turned on the lights for the next round. We did not know whether the bear came for us or was trying to get out of the door. It took us about an hour to start the lighting plant and we were afraid he had pulled out in the meantime.

We went back to the kitchen and looked carefully in the refrigerator, around the large dish-washing machine, in the vegetable pantry, behind the line of ranges, and in

gun and run. The thought that flashed through my mind was the possibility of a bullet glancing if it were shot at the bear's head. I knew that a single shot, even though I hit him in the heart, would not stop him, as he was only 12 feet away and looked much closer. I took careful aim and hit him square in the neck. He went down with a thud, but as he was still making a lot of fuss I gave him another in the back of the neck. He stretched his massive body out as the blood flowed over the floor.

He proved to be a male grizzly and after skinning him out, found the hide measured seven feet nine inches. His claws were four inches long.

An old guide who saw him said he was surprised he was not larger, as his teeth showed that he was an old silver tip. However, he looked large enough to me.

Forest People

THIS column is devoted to stories about real men and women who are doing original, interesting, and worthwhile things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell our readers about them. Manuscripts should not exceed 700 or 800 words, and, if acceptable, will be paid for.

Roycrofters as Forest-Crafters

By M. W. STRUTHERS

THE charm of a "Little Journey" to the home of Elbert Hubbard, famous author, lecturer, and founder of the Roycrofters, at East Aurora, New York, who lost his life on the *Lusitania*, is destined to be greatly enhanced by the new craft-work inaugurated in his honor by his son, Elbert Hubbard, II, and carried out by the workers in his shops—printers, bookbinders, office men, artists, and, indeed, the whole community.

While Elbert Hubbard, II, lives a strenuous life, devoting his activities to his many enterprises, he finds time to repair, both summer and winter, to the locker of Mother Nature for new inspiration, that he may carry on the work of the founder of the Roycrofters.

In this instance young Mr. Hubbard went to the forest cupboard, well accoutered to see that in the future it would not be bare.

Last winter a hundred acres of woods near the town were used as a recreation ground and for his "homemade" scientific forestry. He built "a cabin in the woods" and every Saturday afternoon he and Freddie Bann, the assistant editor of the Roycroft

magazine, took a dozen or more of the craftsmen from the shop, and spent the half-day in the woods, cutting underbrush and trees that ought to be removed for the good of the forest. Out of it they obtained two big results, according to their leader—first, the forestry; and

second, healthful recreation, which was more than that because it was productive work. When the snow was gone this spring, the same craftsmen began planting in this woods, setting out over two thousand white pine to fill in barren spots.

On May 7 of this year, the eighth anniversary of the sinking of the *Lusitania*, the entire community of East Aurora and the farmers within a radius of ten miles joined in one of the most unique co-operative reforestation projects on record. The occasion was ostensibly a memorial to the first Elbert Hubbard, and was led by Elbert Hubbard, II, together with L. W. Tarbox, President of the local fish and game club. The streets of the city were decorated with bunting and flags. Boy scouts, girl scouts, high-school children, American Legion organizations, members of the game club, farmers, and citizens, all joined in a parade, which culminated in the work of the day—the planting of trees. The young people's organizations of the city did the planting, and when the sun had set East Aurora and its outlying districts were richer by 25,000 trees. Each of the workers had more than 125 trees to plant



CRAFTSMEN TURN PLANTERS—ROYCROFT PRINTERS, BOOK-BINDERS, AND WRITERS SETTING OUT THE BABY TREES

and their activities centered on farm woodlands within a radius of ten miles, so automobiles bore the workers out into the woods and fields. Two thousand trees were also planted on the city watershed. This was done in thirty minutes.

Roycrofters with their flowing black ties, khaki shirts and red-topped wool stockings were much in evidence. Mrs. Julia Frances Hubbard, the 91-year-old mother of the founder, was present, and special services were held about an elm planted at the shops, where Elbert Hubbard, II, said a few words and put the first shovelful of earth on the tree dedicated to his father, who established this guild of craftsmanship.

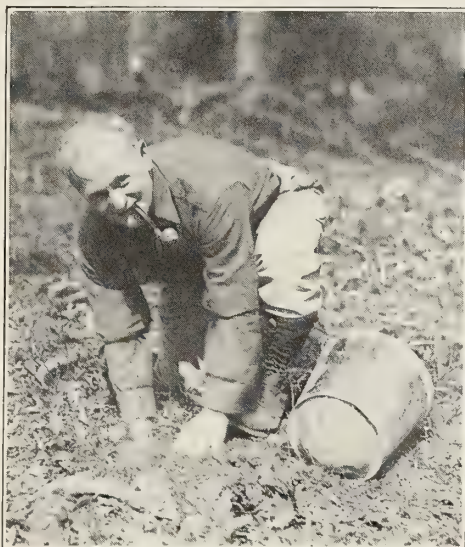
The day proved a complete success and aroused the people of the city and the outlying farmers with a spirit and a determination to bring back their forests. Already applications have been filed, through officials of the game club, by the farmers who own woodlots and waste land in the vicinity of East Aurora, for 109,000 young trees to be planted next year. It was the first time of record that farmers and game clubs of any extensive community have co-operated in planting trees. These two factions in East

Aurora, at least, recognize that they have a mutual interest, one in the growing of trees as a crop for the market, and

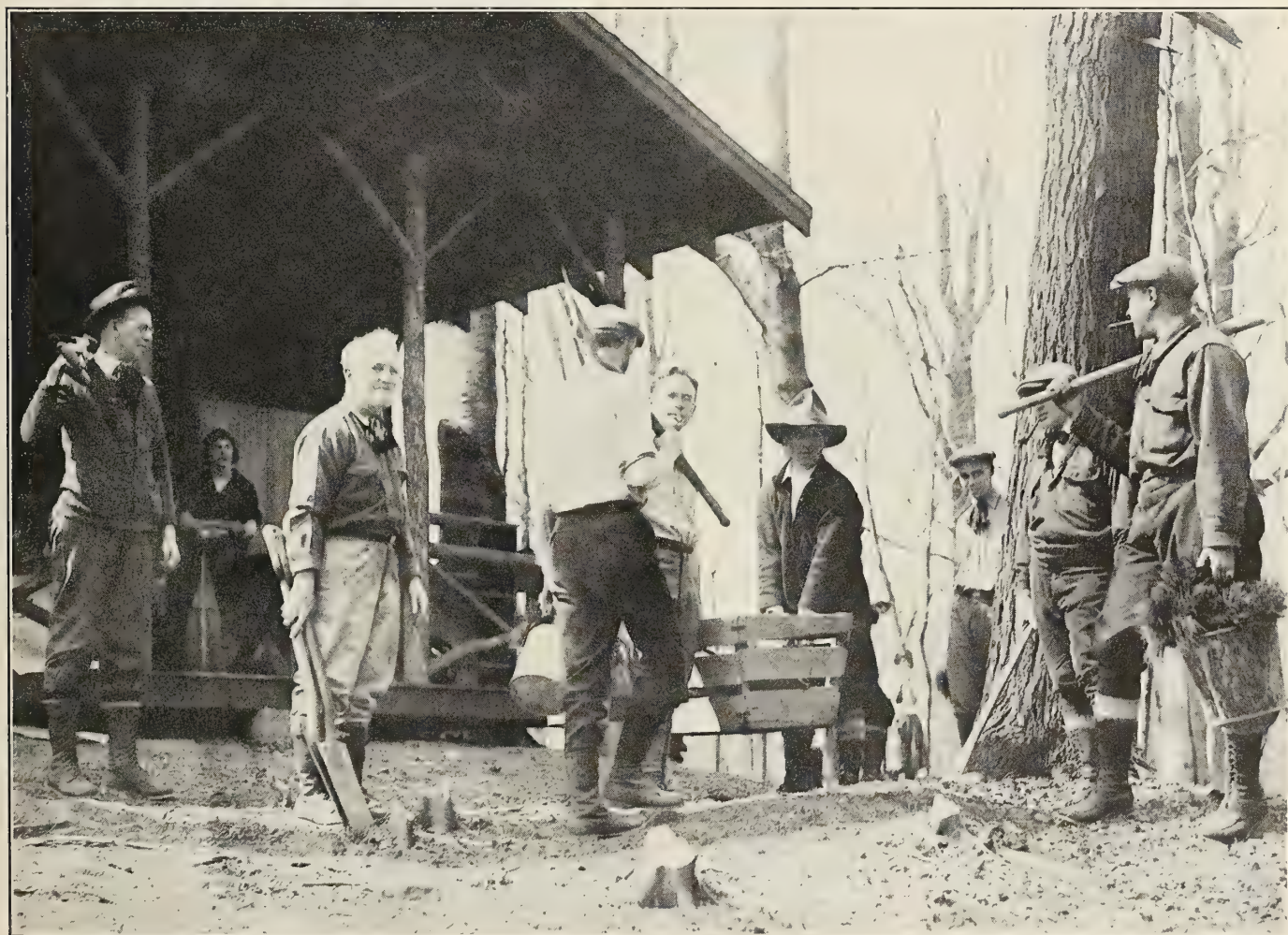
the other in providing cover for game. Commenting on forest craft, which after all was part of the life of the medieval workers, of whom his group may well be called a modern expression, Elbert Hubbard, II, says:

"We here in East Aurora are very enthusiastic about reforestation and we are heartily in favor of it. The work done this spring is only a beginning. The Roycrofters will certainly do their part in it, and on our own property next year we will plant a good many thousand more trees. Of course, we are trying to work along practical lines with this, and are not pure theorists. We are taking the waste places on our land and are planting them to trees. Moreover, we are going to look after them and not just merely let them go to take care of themselves.

"Forestry is one of the greatest movements of the age. I hope that the country at large will wake up to the value and necessity of reforesting and attempt to arouse an enthusiastic local interest and effort."



A CHEERFUL PLANTER—FREDDIE BANN,
ASSISTANT EDITOR OF THE ROYCROFT
MAGAZINE



A GROUP OF ROYCROFTERS LEAVING THEIR CAMP IN THE WOODS NEAR EAST AURORA WITH A THOUSAND WHITE PINE TREES WHICH THEY WILL SET OUT ON THE WASTE SPACES

The Tree-Giver of Rockford

BY NORMAN C. McLOUD

IN ROCKFORD, Illinois, G. J. Boehland stands forth more conspicuously for his personal tree-planting activities than does the State or the Federal Government. Through him the school children of Rockford are learning the real lesson of practical tree-planting by actual experience. Arbor Day has come to be a big day in Rockford, for on that day Mr. Boehland distributes trees to all pupils of the city and country schools of Winnebago County. Each child receiving a tree is asked to sign a certificate pledging to plant it, and the records show that there are few cases in which the pledge fails of strict observance. In consequence the city and county are becoming greener with trees of the Boehland giving. Mr. Boehland has given more than one hundred thousand trees to the youth of Winnebago County. This covers the period of nine years, including 1922, but does not take into account the distribution for the Arbor Day celebration of April, 1923. Based on conservative estimates, the editor of a Rockford paper reckons that 84,000 trees and shrubs are now nurtured in the soil of Rockford and its immediate vicinity as the result of the public-spirited gifts of this tree-loving citizen.

The donor, in his plan to diversify the trees of the region, has included elms, white pines, bridal-wreath shrubs, mul-

berries (planted for the benefit of the birds as well as human beings), red cedars, sugar maples, and apple trees.

In 1918, when the nation was at war, the gifts for that season were omitted, but in 1920, when the country had counted its sacrifice in men, 1,800 American elms were added to the distribution of red cedars, to be used for the planting of memorial trees in honor of the men who had responded to the call to arms. With these memorial trees there were 130 Norway maples, dedicated to be used as gold-star memorials for those who made the supreme sacrifice. Metal plates were inscribed with individual names for the gold-star trees.

Each year Mr. Boehland issues pamphlets carrying instructions for planting and caring for the type of tree to be planted. He has also offered many cash prizes for the best results obtained. Co-operation from the school authorities has been spontane-

ous and satisfying, and includes a recently established system whereby the county superintendent will receive a report every fall as to the development of the trees. In this manner a continuing census will be kept. In each of the one hundred school districts of the county a hard maple is planted each year in the school playgrounds.

Mr. Boehland frankly confesses that his original purpose in tree distribution was to advertise his store. This

(Continued on page 566)



YOUNG ILLINOIS TREE-PLANTERS

These Rockford children are about to go forth to plant trees given by Mr. G. J. Boehland, whose active contributions to the shade-tree wealth of his city make us less pessimistic about the business man's usual lack of interest in our disappearing forests and our barren city thoroughfares. The oval inset shows Mr. Boehland, and the story tells of his fine practical work with the youngsters of Winnebago County.

The Literature of Business

America's Gigantic Trade Press—a Marvelous Paper Inheritance from Bountiful Forests

BY HARRY BOTSFORD

THE Visiting Englishman shuffled his feet uneasily and cleared his throat noisily, but in his usual determined manner. I knew he was going to say something that would entirely offset just what I had been saying. The Visiting Englishman had an annoying way of doing this very thing. I had made a somewhat casual remark about the growth of the American trade, class, and technical press, pointing out that it leads the world in variety and volume. The Visiting Englishman was here for the purpose of studying American business methods, and I deemed it vitally essential to that portion of his education for which I would be held responsible to give him some information on a subject on which I had spent considerable study over a period of years.

I had just completed a very brief statement in regard to our trade press and how it is helping to deplete the pulp-wood supply. To show him just what I meant by a trade magazine, I had tossed over a current copy of *Hardware Age*. He had looked it over carefully and it was at this stage of the affair that he shuffled his feet and cleared his throat.

"But, my dear fellow," he smiled politely, "this isn't so very unusual, you know. We also have a magazine similar to this, only we call ours *The Hardware Trade Journal*. Just before I sailed, there was a rumor of still another periodical to be started in that field. Tell me, now, can you up-and-doing chappies over here match that—two periodicals covering the hardware trade field alone—what?" And the V. E. fairly beamed!

Of course, I spiked his guns; I drew my sheets of data to me and literally "played 'em close to the chest."

"It may interest you," I replied in what I fondly believed to be a scathing tone, "to know that we not only have one publication in the hardware field, but we have *thirty-one*! It may be of further interest to you to know that one of these publications has a circulation of over 45,000, and that many of them have a circulation of over 15,000. These trade papers cover the hardware field proper and do not touch on allied fields, such as electrical merchandising or sporting goods. Can you match that in England?"

The V. E. was a good sport; so he admitted his defeat, and he further endeared himself to me by acknowledging a keen desire to know more of the variety and volume of American trade magazines. He wanted to know the whole story. And here, in substance, is what I told him:

The average American or the average visitor to our shores, I said, realizes that hundreds of magazines are printed and distributed. However, when the classification "magazine" is mentioned they immediately think of the many popular literary publications one sees on sale in so

many places. These publications, unquestionably, have their place in American literature—as a matter of fact, they are the exponents of what is loosely termed as literature.

On the other hand, business also has its literature, and I feel that in terming the trade press as "*literature of business*" I am not missing the mark by a very wide margin. The trade press has been years in the building, but it has grown and kept pace with every phase of American industry and business. The minute an industry becomes established, one or more trade publications are at once launched to cover that industry in every phase and angle—manufacturing, buying, selling, distribution, merchandising, and exporting. Every trade paper is published and edited with one purpose in mind—to be of constructive value to the reader in informing him of events in the industry and teaching him how to be a better and more successful individual in that industry.

No better example can be given of the trade press coming into a field as quickly as the field develops than to say that last March, in the radio telephone industry, then at its peak of popularity, *nine* trade magazines were launched to cover various angles of the field.

TRADE PRESS COVERS EVERY FIELD

Today the trade press is growing by leaps and bounds. I quote figures today that will be eclipsed tomorrow. My last analysis on the fields covered by trade magazines shows that over 250 different classifications are covered by a list of 1,500 trade, class, and technical publications.

What fields are covered by the trade press? Practically every field of human business endeavor. Considered from a strictly alphabetical standpoint, the field would start with *Abrasive Industry*, which is a monthly for superintendents, foremen, and others employing or handling abrasive equipment. It is a sizable little publication with a circulation of 10,000.

To continue the alphabetical continuity of our study of trade publications, we now consider the advertising and selling field. This field is covered by 32 publications, embracing all of the phases of selling and advertising. One publication for traveling salesmen has a circulation of 125,000; another is published for house-organ editors and has a circulation of around 3,000; two cover direct-by-mail advertising; another one specializes in poster advertising; one goes to specialty (back-door salesmen) alone, and one devotes its text matter to advertisers in trade magazines.

Aëronautics has at least six publications which cover the events in the field. The automotive industry ranks



JUST A FEW OF OUR FIFTEEN HUNDRED TRADE PUBLICATIONS

A trade press comprising over 1,500 publications and covering more than 250 different industrial and professional fields is enough to make any conservative foreign visitor catch his breath. The amount of paper and—in the final analysis—the number of trees, consumed by the voracious jaws of the great American trade press runs into many figures.

high among our great national industries and its trade press, also, is large. Sixty-six magazines cover one phase or more of this business—the phase represented by the owner, the garage owner and dealer, and the manufacturer. Circulations in almost every case are higher than one would suppose; one, for example, has a circulation each month of over 60,000. Automotive electricity has two publications of its own which are not covered by the above figures; automotive passenger transport also has its own periodicals, and the lowly and popular flivver has four publications, one of which has a circulation of over 40,000. Eight publications cover the motor-truck field.

VARIETY MARKS BUSINESS LITERATURE

How about “baking,” the next on the list? It is, of course, very well represented and it always will be, so long as the loaf remains the universal staff of life. Ten publications cover this field. The leader in circulation publishes over 30,000 copies each month.

In the banking field it is possible for a banker to secure 64 publications devoted entirely to his field of endeavor. The circulations of these various publications go as high as 50,000 and the subscription price ranges from free circulation to a price of \$10.00 a year. Scant excuse for the modern banker not being well informed and up to date on events in the financial world, is there?

One would naturally think that when Mr. Volstead's famous—or infamous—amendment went into effect that all publications devoted to the art and science of brewing and distilling would go into the discard. Not so! As a matter of record, three of them are still doing business and are in a very healthy condition—one has a circulation of 4,000. The beverage and bottling industry, the soft-drink people, also have their publications—an even dozen of them. As a glimpse of what proportions the soft-drink industry has reached, it may come as a distinct surprise to some people to know that these dispensers spent over \$400,000,000 a year for supplies alone. The leader in this field has a circulation of over 14,000.

Now for a few—just a very few—more glimpses of some of the fields covered by our trade press: In the brick and clay industry, five publications cover the field; in the building and contracting field, over thirty-six periodicals exist; building materials are covered by three magazines; six magazines cover the canned-foods field; eight monthlies cover the field of ceramics; it takes seventeen magazines to cover the chemical industry, and the cleaning and dyeing business men have three magazines of their own.

To continue the list would be to cover every known field of endeavor. It might be somewhat profitable, however, to quote a few cases of some unusual fields covered by trade publications. Take *The Peanut Promoter*, for example. The name may bring a smile, but nevertheless this little magazine is held in high respect by those who grow and handle peanuts. The field, I will confess, is a little out of the ordinary.

There are three publications in the welding industry alone,

and this may afford some astonishment to those who have never even considered this as an industry in any respect.

The American Nut Journal may bring a broad smile to the face of the reader, but it is an essential publication for those in the business of producing, handling, and selling of nuts in any way.

American Notions does not deal with Americanisms, or with our national habits of thinking, or with queer angles of life, liberty, and the pursuit of happiness—no, indeed; rather it is a journal, with a circulation of 5,000, devoted to making better business men of the owners and operators of the many notion stores of this country.

Even the lowly bean has its literature—in the form of *The Bean Bag*.

Funeral directors insist that theirs is a profession and not a business. They have six monthly publications which make this sensible claim, and one is called *The Sunnyside*.

Even if one considers the day of the village blacksmith as being yesterday, one must reverse that opinion when he learns that *The Horseshoer's Journal*, read by blacksmiths, is a very healthy publication.

And so on down the list—stone, steam, ice, compressed air, fish, sewing-machines, sugar, tea and coffee, tires, tractors, tobacco, textiles, underwear, veneers, wood-turning, world convention dates—every one has its own business literature—over fifteen hundred of them, all told.

In physical appearance most of these trade, class, and special publications are excellent; they are well printed and well illustrated on paper of very good quality. The amount they use in a single year has never, to my knowledge, been estimated.

TRADE PRESS ESSENTIAL TO MODERN BUSINESS

Modern business, the writer believes, could not get along without the trade press. It is a vital, essential part of our modern industrial and business progress. It is helping to keep this country the leader of the world in practically every field. It is a sane, sensible commercial journalism, designed for the purpose of making better business men and bringing more efficient methods to our manner of conducting business.

As I completed this narrative, I shoved the actual figures across my desk to the Visiting Englishman. He had followed me carefully—even interrupting me now and then for additional detail about certain fields—and now, at the conclusion, he again shuffled his feet, cleared his throat, and proceeded to pay the American trade press a very high compliment. His smile was positively radiant when he vocally expressed his opinion.

“Extraordinary!” he exclaimed. “But,” he added, after a pause, “these periodicals—every blessed one of them—are dependent upon paper, and you Americans are destroying your pulp-wood supply at a perfectly staggering rate. What is going to happen to a great—yes, a very great—number of these magazines when Canada refuses longer to sell you pulp-wood and your own depleted supply sends up the price of paper?”

He smiled, and there was a gleam in his eye. I could not answer him.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

A Cause and a Life

CONSERVATION for Alaska is settled. Its settlement has cost the Nation a great and much-loved President. Mr. Harding would never have gone to Alaska had not this richest of our possessions been a storm center of controversy, involving conservation policies. Under the alias of development, men and interests who have long sought to quarter Alaska's natural resources and to divide it among their own succeeded in throwing up a smoke screen which obscured the truth as to Alaska's conservation needs.

That justice might be done, Mr. Harding, as President of the United States, desired the truth. He went to Alaska and sought it out first hand. With it, sheathed in words of characteristic kindness, he settled Alaska's conservation policy in his last public address, delivered in Seattle on July 27. He downed with the simple truth these would-be exploiters of the people's wealth. In the court of public judgment, they are discredited and stripped of their sheep's clothing. Across their Alaskan trail will stand for all time these words of Warren G. Harding, spoken as President of the United States:

"I must confess I journeyed to Alaska with the impression that our forest conservation was too drastic, and that Alaskan protests would be made on every side. Frankly, I had a wrong impression. Alaska favors no miserly hoarding; but her people, Alaskan people, find little to grieve about in the restrictive policies of the Federal Government. . . . The Alaskan people do not wish their natural wealth sacrificed in a vain attempt to defeat the laws of economics, which are everlasting and unchanging. I fear the chief opponents of the forestry policy have never seen Alaska, and their concern for speedy Alaskan development is not inspired by Alaskan interests.

"I have alluded to the threatened destruction of the fisheries, due to admitted lack of regulation and protection. We have begun on the safe plan with the forests."

Alaska needs not less, but more, conservation. Mr. Harding in the last hours of his life, left as an unassailable heritage the undying spirit of wise conservation for Alaska's wonderful resources. We predict that in years to come this message will rank among the greatest and most lasting acts of his administration.

Massachusetts' New Timber Tax

MUCH skepticism is abroad as to the possibilities of working out fair and practical tax measures for growing forests. Some of the skeptics might profitably watch the results being obtained from the timber tax law recently enacted in Massachusetts. This bill went into effect only about 11 months ago, but Richard T. Fisher, Director of the Harvard Forest, has called our attention to the workings of the law as he has observed them in the five towns adjacent to the Harvard Forest. Professor Fisher, referring only to owners known to him, states that not less than 12,000 acres of forests in this locality are now assessed under the new law as bare lands, with a production tax of 6 per cent, due when the timber is cut.

The transfer of these lands from the old property-tax basis to the new has been accomplished by conference between local assessors and owners and with very little recourse to the arbitration of the State Forester, as provided by the law. Tracts have been registered in units up to several thousand acres in area. Contiguous lots of varying age and condition are combined, so as to meet the necessary average of volume and assessed valuation per acre. In some cases the prospective yields of these

units have not been too strictly looked into by either party, but as long as towns can meet their present budgets, this is not at the outset a bad policy, especially as the remedy is in the town's own hands. Adequate reforestation can always be insisted on.

"It appears feasible, as expected," Professor Fisher asserts, "for towns to make good temporary losses of tax revenue by slight general increases in the valuation of older, ineligible, timber, especially where, as happens when merchantable stands are included in a registered parcel, the products tax will soon be due. Experience so far indicates that a substantial percentage of Massachusetts woodland will gradually pass, without either undue disturbance of revenues or complicated administrative machinery, from the annual property to the periodic products tax. Already the recognition of timber as a crop, to be improved, worked at profitable intervals, and replaced, is noticeably strengthened."

If developments in the balance of the state's three hundred and fifty towns are comparable, Massachusetts may soon claim the distinction of having accomplished the first workable reform in forest taxation.

Saving the Forest by Saving Wood

MORE timber, it is claimed, is destroyed annually by decay than by fire. The statement is probably true. In any event, wood-destroying fungi, working day and night, are robbing us of a staggering amount of wood. Every foot, in bridge, building, or railroad tie, thus destroyed demands for replacement the cutting of three feet in the forest. Decay is a forest enemy ranking side by side with fire. But it is not spectacular; therefore it is little in the public mind. If we want to prolong our forest supply, it is just as important to stop the ravages of wood-decaying fungi as it is to stop forest fire.

It is possible and practicable to combat decay in wood. Wood preservatives have been developed to a point of great effectiveness. For example, experience has proven that the life of a railroad tie can be doubled by effective treatment. If all our railroad ties were treated, instead of only 30 per cent, we would save one and a half billion feet of wood annually. If the mining companies, many of which express so much interest and concern about the timber shortage, would treat the 300 million feet of mine

timber which they use annually, their day of timber shortage would be materially postponed. As a matter of fact, very little timber going into our mines today is treated, although in the majority of cases it would be permanent economy for the mines to protect it against the rapid decay to which it is subjected underground.

Wood preservation is a vitally important phase of forest conservation. It is not new. Experience and development have eliminated guesswork as to results to be obtained. Standard practices can be counted on to give added life and service to wood where it is subject to decay, and thus effect a very great saving to the nation. Every foot of wood saved for longer service by preservative treatment means a lessened drain upon our rapidly disappearing forests; and, as has been said, a forest saved is a forest grown. One of the greatest tangible contributions which those industries using wood under conditions inviting decay can make to the forest cause is to lighten the drain upon our already overtaxed forests by adopting standard practices of wood preservation.

The New Forest Experiment Station

PROOF that foresters are getting down to "brass tacks" is seen in the creation of two new Federal Forest experiment stations—one in the Northeast and one in the Lake States. These stations should be a substantial reinforcement to the forestry movement.

Research is to forestry what an intelligence corps is to an army. Without an intelligence corps, an army would have to move more or less blindly. Two eminently qualified foresters will be in charge of the stations—Mr.

Raphael Zon in the Lake States and Mr. Samuel T. Dana in the Northeast.

The American Forestry Association is glad to have had a helping hand in getting the legislation for these stations. The next move is to put forest research in the far West on the same footing as these new Eastern stations. The friends of forestry in the West should take heart and make known to Congress the urgent need of forest experiment stations, particularly in the Pacific Coast belt.

Forests and Game Conservation

WE ARE burning up our forests, and with them our wild life. If you doubt this statement, read Mr. Leopold's article, "Wild Followers of the Forest," which appears in this number of AMERICAN FORESTRY.

If our forests and meadows are too wet to burn, we stand by indifferently and permit promoters, who do not give a tinker's dam for forests, wild life, or a decent out-of-doors, to drain them as dry as gunpowder, on the plea that the land is needed for agriculture. If you take exception to this statement, we commend to your reading the article "In Behalf of Our Waterfowl," on page 547 of this issue. Carlos Avery, its author, is an authority.

Wild game follows the forest, and when the forest disappears there is a marked decline in wild life. Wild animals, deprived of their forest covert, are readily seen and easily shot down by hordes of hunters with pump-guns and high-powered bullets. But the disappearance of game with the disappearance of forests has a much deeper significance. Forests are fundamental to a great variety of our wild life, particularly our big-

game group, because they supply two essentials, food and breeding grounds. Destroy those two essentials, and game conservation by any or all other measures is, to say the least, short-sighted and shell-coated.

Considering the fact that more than 80 per cent of our original forested area has been slashed over under a forest policy of destruction, is it to be wondered at that the wild life of America is all but exterminated?

Indifference or ignorance as to the vital part which forests play in maintaining the kingdom of animal life is monumental. We destroy the forests and let them remain destroyed, in spite of our need of wood and our want of game. Optimists would have us think that all is well with our forests and our game. Facts do not bear them out. The wreckage of forests and the accompanying wreckage of wild life still going on in this country is outrageous. If the forest conservationists are wise, and if the game conservationists are wise, they will join hands, unite their strength, and drive forward with a solid front. The cause of both begins with the forests and succeeds in the forests.

Better Work



THE Disston No. 53 Special Groover is made with one section bevelled to cut on one side of the groove while the next section cuts on the opposite side. These two cutting sections are followed immediately by a raker tooth which chisels out the wood. This construction makes it possible to operate the saw with minimum power and it insures very fast and smooth cutting together with the utmost in dependable service.

Thus it is that in the manufacture of special saws, as in the making of knives and other tools used in woodworking, the name Disston stands for the utmost in quality—the utmost in design, finish and workmanship.

Remember—Disston Quality is always in demand and, as it takes time to produce such quality, it is well to anticipate your requirements and order in advance of your needs.

Henry Disston & Sons, Inc.
Makers of "The Saw Most Carpenters Use"
Philadelphia, U. S. A.

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Toronto, Ont. Vancouver, B. C.

DISSTON

SAWS TOOLS FILES

The British Empire Forestry Conference

(Continued from page 534)

The United Kingdom, the great wood-consuming center of the Empire, has less than one-third of one per cent under forests.

Seventy-five per cent of the forest area of the Empire still belongs to the state and only 25 per cent to corporate bodies and private individuals.

Only 2½ per cent of the forest area of the United Kingdom is state owned.

The Empire's imports of wood and timber just before the war exceeded exports by 150 million cubic feet per annum.

The United Kingdom drew (1909-1913) 88 per cent, by volume, and 83 per cent, by value, of her imports from without the Empire.

Mr. E. H. Finlayson, Acting Director of Forestry for Canada, as manager of the conference, made a most excellent arrangement whereby after the formal opening at Ottawa on July 25, the delegates, numbering about 50, left on a special train, visiting the Forest Products Laboratories at Montreal, the nurseries and plantations of the Laurentide Paper Company, at Grand Mere, P. Q.; the mills and new construction of Price Brothers, Limited, in the Lake St. John country; the timber industries at Campbellton, Bathurst, Chatham, and St. John in New Brunswick, with a very impressive side trip to Salmon River to inspect the plantations and other features of the Pejepscot Paper Company. The Quebec Government nurseries at Berthierville were next visited. The latter half of the tour, which commenced at the time of sending this dispatch from Ottawa, will serve to introduce the delegates to other forest districts of the Dominion and to the tree planting problem of the bare prairies in British Columbia. On the return to Ottawa on August 6 a carefully prepared and informative discussion of "The World's Softwood Supply" was commenced. Natural and artificial regeneration occupied the following two days, followed by a visit to the Dominion Government sample plot at Chalk River, Ontario. One of the most interesting days of the conference was given to fire protection in which slash disposal and the education of the public came in for very strong emphasis. The morning session of Friday, August 10, brought out valuable addresses from Sir James Calder, formerly British Timber Controller, and a very large importer of European softwoods to the British Isles. Sir James Calder incidentally expressed the view that he did not share in the general apprehension of a timber famine, as he placed a much higher estimate on the softwood supply of the Baltic countries than was commonly believed.

A paper on forest research, written by Colonel W. B. Greeley, was read by Colonel Graves, and not only was highly valuable for the information and points of view it contained, but gave immediate occasion for much interesting discussion. Colonel Graves also presented a paper on the world's softwood supply, discussing it from the United States angle. He told the conference that the depletion of softwood forests accessible to the larger centers of population and the higher costs of timber products transported from greater and greater distances, has already been plainly and painfully felt in the restricted use of softwood lumber in the United States. He declared that the most definite and effective step which the United States has yet taken to meet its forest problem has been the retention or placing of a little more than one-fifth of its total area of forest lands under public ownership and management.

R. D. Craig, of the Dominion Forest Service, pointed out that while there are approximately 1,200,000 square miles of forest land in the Dominion, less than one-half of this area contains timber merchantable for pulpwood and other commercial uses, while less than one-fourth of the area contains saw timber.

Forest People

(Continued from page 560)

purpose, however, was short-lived. Before he had completed his plans for the initial distribution in 1914 he had lost the advertising idea completely and with finality. "I quickly became imbued with the wonderful sentiment of the thing," he says, "and this made me abandon completely all thought of commercializing the plan for any advertising value it might have."

"I discovered that all normal youngsters have instilled within them a love of trees and an interest in helping Nature in her tree-work. What our children and our trees need is a fair chance."

The idea itself had become bigger than the end it was originally destined to accomplish.

Mr. Boehland believes that a love of green trees is an asset the value of which cannot be measured in mere dollars and cents, but which has the power of making happier, healthier, and better citizens of us all. Giving trees, he says, has given him the thrill which comes from great inspirations.

GREAT SOUTHERN'S HISTORY-MAKING REFORESTATION OPERATIONS ASSURE OUR TRADE A SUPPLY IN PERPETUITY



BOGALUSA

Trade-Mark Reg. U. S. Pat. Off.
 "NOT ONLY THE LARGEST, BUT THE BEST ORGANIZED, SAW-MILL OPERATION IN THE U. S."

FOR HIGH STANDARD MILL CONSTRUCTION.

The designer, the builder and the owner of the best types of "mill-construction" factories, warehouses and office-buildings, know that the BOGALUSA Trade-mark on every timber, board and bundle is their complete guaranty that the wisely rigid exactions of the Factory Mutuals, the American Society for Testing Materials and the American Railway Engineering Assn. have been scrupulously adhered to *at the source*.

CAPACITY 1,000,000 FEET DAILY WITHOUT HASTE OR STRAIN

pleased to quote promptly on request.

GREAT SOUTHERN LUMBER CO.

Bogalusa, La.



Wild Followers of the Forest

[Continued from page 519]

food for bear and grouse. For this exception to an otherwise black record, let the fire devil have his due. But this is not the whole story. *The practice of forestry on these lands likewise provides berries and game food.* Berries come in when sunlight reaches the soil, and the cutting of mature timber in any producing forest lets the sunlight in upon the soil at the end of each generation of trees. Thus berries and other sun-demanding food plants are a normal part of the producing forest, and are better distributed from the standpoint of game production when they arise from cuttings than when they arise from whole regions swept by fire.

In short, fire does no good to game which forestry would not likewise do, and fire does enormous damage to game which forestry would avoid.

EVEN FISH ARE EXTERMINATED BY FOREST FIRES

In recent years there has been a growing realization of the fact that even fish are adversely affected by forest fires. The Bureau of Fisheries cites the case of Slippery Brook, a tributary of the Saco River in New Hampshire, where in 1900 a severe fire was followed by a rain. After this rain many dead fish were seen in the brook, presumably killed by the alkaline ashes washed into the water. Fires must certainly upset the delicate balance of chemical, thermal, and biological conditions on which the productivity of our lakes and streams is dependent.

It has been suggested that fires may occasionally kill fish by the direct and immediate heating of waters. But there seems no basis for believing that even the worst fires ever boiled any waters in this country. A survivor of the terrible fires in the Northwest in 1918 states that the temperature of creeks was raised "several degrees" only. He ought to know, because he stayed in one while the fire passed him.

The foregoing discussions may convey a general idea of why and how fires destroy game and wild life and why game conservationists must ally themselves with forest conservationists before either can accomplish much in the way of protecting our resources. This community of interest in-

duced by the existence of a common enemy is, however, only part of the story. There are deeper and more significant reasons why forestry and game management must work together and learn from each other.

The fundamental thing in both game and forestry is that we, the public, must grasp the idea of *production*. If conservation does not mean production, then it means nothing at all. I do not mean production merely in

represent production and may be—nay, must be—all grown on the same forest land.

A certain technical competence must accompany it; the average citizen must be enough of a forester to appreciate that *keeping* our land productive does not mean huge capital investments. The often prohibitive cost of restoration always tends to become an alibi for incompetence in conservation. To be sure, a blackened desert takes cash to replant with trees, and the entire extinction of game takes cash to restock. But the blackened burn and empty covert are not the normal concomitants of use. They are the abnormal, unnecessary results of ignorance.

Also, a certain moral and esthetic competence must accompany it. There must exist in the public mind that fundamental respect for living things and that fundamental aversion to unjustifiable killing and to unnecessary ugliness which in all lands and all times has been a necessary foundation for good morals and good taste.

In short, a little skill, a little care, and a little moderation will keep both forests and game productive, if exercised habitually by the whole community. Woolsey, in his "French Forestry," says that the habits of mind of the peasants and woods-workers of the Landes have been as much responsible for the successful reclamation of that province from the sand dunes and the sea as has the technical skill of government foresters who have planned

and supervised the reclamation works.

We will accomplish conservation when we, as a nation, scorn waste, pollution, and unproductiveness as something damaging, not only to the individual reputation of the waster, but to the self-respect of the craft and the society of which he is a member.

"Seemeth it a small thing unto you to have fed upon good pastures, but ye must tread down with your feet the residue of your pasture? And to have drunk of the clear waters, but ye must foul the residue with your feet?"

[Photographs by courtesy of the United States Forest Service.]



REPRODUCTION OF A RECENTLY ISSUED POSTER

the limited industrial sense of boards, meat, dollars, or even tourists. I mean that attitude of mind which will not tolerate the existence of idle, lifeless land in America. I mean that attitude of mind which regards the existence of such land as a challenge to the technical skill and social foresight of the nation, and which feels the non-acceptance of that challenge as something unworthy of good citizenship.

BLACK BURNS AND EMPTY COVERTS SPELL IGNORANCE

There is a certain broad-mindedness that must go with the attitude I am trying to define—a certain ability to see that a landscape, a covey of grouse, or a saw-log all



The illustration on the left shows the original crate used by a manufacturer of motor truck radiators. It contains one radiator and exposes contents to damage in shipment. After studying this manufacturer's problem, Weyerhaeuser Crating Engineers designed a crate to take six radiators.

The middle picture shows the bottom rack for nesting radiators and the bottom and sides of the new crate. The picture on the right shows the new crate ready for shipment. Note the improvement in protection given to contents. The savings effected by this new crate are explained below.

Scientific Crating Means More Than the Designing of a Single Crate

MANY manufacturers still look upon the packing of their goods as a minor incident of their business. They haven't investigated the far-reaching results of better packing.

When manufacturers in many lines of industry, with the cooperation of Weyerhaeuser Crating Engineers, can effect savings that amount to thousands of dollars a year, it is worth the time of any busy executive to check up on his own packing methods.

The work of Weyerhaeuser Crating Engineers doesn't consist in merely substituting one crate for another. They apply their scientific principles and practical experience to a manufacturer's shipping problems. Quite frequently they revolutionize a concern's packing practices.

TAKE the case of the motor truck radiator illustrated above. This concern was packing one radiator in a crate and having trouble with shipments damaged in transit. The Weyerhaeuser Engineers worked out a crate that carries six radiators and that gives ample protection to the contents.

The results of applying scientific packing to this problem were:

- A better crate in every respect.
- A saving of 43% of lumber, per radiator.

A saving of 17% in shipping weight, per radiator.

A considerable saving in labor.

The shipment of 654 radiators per car as against 500 radiators in old style crates.

The returns from good packing often extend far beyond the shipping room. It eliminates damage claims and speeds up collections. It decreases sales resistance and so gives the salesman a new selling tool. Safe packing builds good will.

THE services of Weyerhaeuser Crating Engineers are offered to executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of crating lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser Engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 2694 University Ave., St. Paul, and with representatives throughout the country.



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Lumber in Brazil

[Continued from page 522]

species which are sold as jacaranda. There is great uncertainty as to their botanical classification. The ordinary jacaranda of trade resembles mahogany in color, but often has black streaks running through it. Sometimes it is beautifully marked. It is a hard, heavy, close-grained wood which takes a fine smooth finish.

Umbanba is a light, soft, nearly white wood, which apparently is used only for paper.

Madeira de lei. All of the marketable hardwoods which are not of the finer quality and sold under their own name are known as *madeira de lei*. This name, therefore, covers a great number of species, most of which are heavy, hard, and of dark color. It is customary for contractors simply to specify *madeira de lei* when ordering lumber for common construction. They may get lumber of any one of a dozen species, yet they know that they will get heavy, strong hardwood. *Madeira de lei* does not, however, include all of the hardwoods not sold under their own name, but only those species which are considered merchantable. The custom of selling a number of species together as *madeira de lei* has probably grown up from the fact that in the mixed hardwood stands it was difficult and expensive to cut only one species or to separate the timber by species after it was cut.

THE SENATE COMMITTEE IN THE WEST

Beginning at San Francisco September 3 and probably leaving Missoula September 17, the McNary Reforestation Committee of the United States Senate will visit the Pacific coast under instructions to "investigate problems relating to reforestation, with a view to establishing a comprehensive national policy for lands chiefly suited for timber production, in order to insure a perpetual supply of timber for the use and necessities of citizens of the United States."

Senator Charles L. McNary, of Oregon, who has long been a champion in Congress of practical forestry work, is chairman of the committee. His associates are Senators Harrison of Mississippi, Moses of New Hampshire, Fletcher of Florida, and Couzens of Michigan. Report to the Senate must be made by April 4 next. Hearings have already been held in Washington, in the South, and in the Lake states.

Present plans of the committee are for one-day hearings at five points: San Francisco, September 6; Portland, September 8; Seattle, September 12; Spokane (for Idaho), September 14; Missoula, September 17. Short field trips, to see representative forest types, operations, and reforestation conditions will probably be made in California, the Puget Sound region, and northern Idaho.

Representative lumbermen, with state, federal, and forest school officials, will be asked to testify as to reforestation prospects and difficulties with particular bearing upon what form of federal legislation can give practical aid and encouragement. Questioning at previous hearings indicates that the committee is keenly interested in what can be done to stimulate private effort, especially through better fire prevention and taxation methods. Since federal, state, and private co-operation is the basis of proposals already before Congress, and the west affords the most advanced development of this, it is likely to receive much of the committee's attention.

TREE-PLANTING PENNSYLVANIA

A summary recently made and announced by the Department of Forestry of the State of Pennsylvania shows a remarkable total of 5,085,045 trees privately planted in the spring of 1923. This has been classified according to counties, the three counties leading the state being Indiana, with a total of 344,570, followed by Berks, with a total of 304,601, and Allegheny, with 292,133 trees.

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BOOK REVIEWS

FOREST POLICY IN THE BRITISH EMPIRE.

By Sir William Schlich, K. C. I. E., F. R. S., F. L. S., Ph. D. Fourth edition, revised and enlarged, of Volume I, Schlich's Manual of Forestry, London, 1922. (Bradbury, Agnew & Co., Ltd.) Price, 15 shillings.

This volume is a noteworthy addition to the list of authoritative books on forestry. Its author, Sir William Schlich, is probably the best-known British forester. From 1885 until 1921 he was head of the leading English forest school—first when it was a part of the Royal Engineering College at Cooper's Hill, later after it had become the School of Forestry at the University of Oxford. Schlich's "Manual of Forestry" was the first comprehensive text-book on forestry to be published in the English language. By frequent revisions, its five volumes have been kept up to date, so that they retain their place on the reference shelves of every forest school library. This fourth enlarged and revised edition of Volume I performs an especially useful function, in that it makes available much reliable information.

The important feature of "Forest Policy in the British Empire" is that it consists in large part of a full and carefully compiled summary of a series of official statements that were presented at the First Imperial Forest Conference, held in London in July, 1920. At that time foresters from all parts of the empire assembled to discuss common problems and to consider plans for an empire-wide forest policy. Thirty-four official statements were submitted by the delegates from the several British dominions, colonies, and other possessions represented. Many of these statements were accompanied by statistical data and by maps. Together they form the best present source of information about the forests and forest work of the British Empire. Dr. Schlich's book reproduces what is of real importance and includes as well critical comments and observations of his own on the subject-matter of the reports.

To American readers this book is of value particularly, in that it records the experience of other English-speaking countries with certain forest policies, some of which have an especial interest to us, in view of the active discussions that are now going on apropos an extension of the National Forest policy of the United States.

Another reason why "Forest Policy in the British Empire" is timely just now is the fact that a second Imperial Forest Conference of the British Empire is being held at Ottawa, Ontario, Canada, at this time.

FOREST RESOURCES OF THE WORLD

The problem of supplying the world with timber is a problem of growing softwood forests to replace those which have been cut, and to extend the areas of softwood forests wherever conditions make it feasible. This, in effect, is the conclusion given us by a remarkably informative book, entitled "The Forest Resources of the World." The authors are Mr. Raphael Zon and Mr. William N. Sparhawk, of the United States Forest Service. In the two volumes, which comprise the set the authors have brought together more exhaustive and at the same time more authentic information about the forest resources and the forest economics of the world than has ever before been assembled.

When the term "timber shortage" is used, we are told by these authors, it is the softwoods that are meant, because the conifers, by reason of their light weight and adaptability, are, and have been for years, in far greater demand than the heavier hardwoods. The foregoing statement, we are assured, is not to be interpreted as meaning that the hardwoods of the Temperate Zone, such as oak, maple, ash, walnut, birch, beech, and numerous other species which are widely used for furniture finish and industrial products, are not being rapidly depleted. Depletion is, in fact, going forward rapidly in our hardwood as well as our softwood forests, but there are vast reserve supplies of hardwoods which can be drawn on to meet forest exhaustion in our hardwood forests. These reserve forests of hardwoods are in the tropics and have thus far been little drawn upon.

The vital forest problem of the world is clearly outlined in the softwood situation. More than three-fourths of all lumber used in the world comes from coniferous softwood forests of the Northern Hemisphere. According to Messrs. Zon and Sparhawk, these forests, composed of pines, spruces, firs, hemlocks, and like species, are for the most part confined to the Temperate Zone, where the great forest-destroying and lumber-consuming peoples have been recklessly cutting away their forests until the best and most accessible have been largely destroyed, and those remaining are barely sufficient to meet the world's present needs.

There is a constant demand for information about the forests of the world, and the two volumes by Messrs. Zon and Sparhawk fill a long-felt want. The pages are not only replete with information, but there are detailed forest maps for every important forest region and country of the world.

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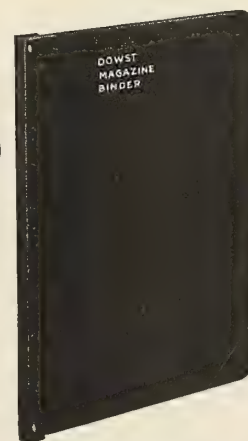
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THE MIDSUMMER RIDE OF THE FELLOW WE FEAR

(With Apologies)

LISTEN, my children, and you shall hear
How a tourist drove forth in the time
of year

When the twigs and leaves and dead wood
lie

Around the forest crisp and dry.

'Twas the 18th of August, '23,

And many a one still lives to see

What a lighted match, just thrown away,

Did to the forest upon that day.

Through the woods his auto sped,

The pine trees meeting overhead.

He heard the song of the babbling brook,

The birds, in each sequestered nook,

Thrilled forth their joyous roundelay,

And all things living seemed at play.

He slowed his car and stopped to look

At the flowers, and birds, and running brook,

Where the sunbeams danced in each leafy
dell,

And chased the shadows that rose and fell.

He lighted his pipe and with thoughtless
fling

He threw the match, with its deadly sting,
Down on the ground, where things were
dead;

Then stepped on the gas and onward sped.

It lit in a heap of twigs and trash

And kindled a flame like a lightning flash.

The wind its silence had kept before,

Now awakened to life with a mighty roar;

It fanned the flames with fiendish glee,

As they leaped like devils from tree to tree,

While sparks were hurled by the torrid
breath

O'er the country far on their mission of
death.

They conquered the flames, but what a cost!
You may hear them tell of the brave ones
lost;

Of towns and hamlets gone from sight,

Laid low by the fire's awful blight.

The trees still stand, all scarred and sear;

The country round is bleak and drear;

Death and destruction have come to stay,

But the tourist no longer goes that way.

—J. B. Cammann, D. O.

ONE-TIME LUMBER PRICES IN ARIZONA

A contributor to a Safford, Arizona, newspaper tells of a time when common lumber in that region brought \$100 per thousand and sawmill could not supply demand. The first sawmill, in the Graham Mountains, within what is now the Crook National Forest, according to this writer, was built about 1880 by a man named Frye, who had been a sailor. He contrived his sawmill to run something like sails are handled on ship-board, with ropes and pulleys. His power was a pair of small mules attached to a sweep that turned a master wheel. The product found ready market at the mill, even at ten cents a foot. The price was not regarded as excessive, considering the laborious method by which the lumber was sawn.

Mention AMERICAN FORESTRY—It Helps

AN ICE MINE ON STATE PROPERTY LAND

District Forester Leach is proud of the only ice mine that exists on Pennsylvania State Forest Land. It is located along the former road bed of the Juniata and Southern Railroad, near Aitch, in Huntingdon County. In early spring there is often considerable ice in the mine. Some years the ice remains all summer. In building the Juniata and Southern Railroad the entrance to the cave was closed with cinders and other material. Recently the visitors became so numerous that the cave was reopened in order to get a better view of this natural wonder.

District Forester Leach states that this ice mine may be rivaled, but is not excelled, by the one near Coudersport. This Huntingdon County ice mine is near a picnic ground and affords a convenient and satisfactory place to cool beverages. It is free to the public and one of the most interesting natural wonders in central Pennsylvania.

SCOVELL APPOINTED ASSISTANT FORESTER

Earl T. Scovell, formerly of East Westmoreland, New Hampshire, has been appointed Assistant State Forester of the Department of Conservation and Development, to fill the vacancy created by the recent resignation of A. D. La Monte, of Bound Brook. Mr. Scovell graduated from the Yale School of Forestry last June with a master's degree. He is also a graduate of New Hampshire University, having been awarded his B. S. degree in 1918, although at that time he was serving overseas in the 318th Engineers, with which organization he saw 18 months of service.

LOUISIANA'S NEW COMMISSIONER

Announcement has been made of the appointment of Dudley Berwick as Commissioner of Conservation of Louisiana, to succeed Mark Leigh Alexander, lately deceased. Mr. Berwick outlines a broad policy and declares that it is his purpose to carry forward the conservation movement in all its phases in a way that will reflect credit upon the state.

A CORRECTION

In the May number of AMERICAN FORESTRY, on page 319, in announcing the opening of the forest school at the Louisiana State University, it was stated that this was the first school in the South to have a complete course in forestry. This was an unfortunate error, as the Division of Forestry at the Georgia State College of Agriculture, at Athens, Georgia, offers a degree of B. S. in Forestry and has been in operation since 1905. Graduates of this school are now holding positions of responsibility in many parts of the country.

PLANTING RECORDS BROKEN IN NEW YORK

A record of trees planted in New York since 1911 on public and private land is interesting, in that it shows the active and inactive localities in this conservation work. The total number of trees planted in the State of New York since 1911, as far as it is possible to tabulate them, is 56,691,691. During the war reforestation fell off perceptibly, but has recovered, and this spring broke all records with regard to private land. The addition of trees to be set out this fall will undoubtedly bring the total for the year beyond all previous planting operations on both public and private holdings.

Every county in the state has planted trees. Such counties as New York, Kings, and Queens, in the heart of the Metropolitan District, have planted many trees. The counties of the Adirondacks and Catskill regions, where large tracts of state land are located, have the highest records. Franklin County leads, with 13,503,000; Essex comes next, with 5,999,000, and Orange County third, with 3,229,000. One of the surprising records is made by Westchester County, which comes first among the counties outside the Adirondacks and Catskills, with 2,453,000. This is due largely to extensive planting to protect New York city's water supply. Fulton, Oneida, Oswego, Otsego, and Saratoga counties have all planted more than 1,000,000 trees. Seventeen counties are under 100,000 trees, twenty-one above 500,000, and fifteen above 1,000,000. Orleans is at the bottom of the list, having planted but 2,000 forest trees. Schoharie comes next, with 13,000, and Yates third, with 15,000. New York, Queens, and Kings have planted almost an equal number, with New York leading—28,000, 22,000, and 18,000 respectively.

LOUISIANA'S NEW STATE FOREST

The Louisiana State Forestry Association announced at its recent annual meeting at Bogalusa that the first state-owned public forest in the yellow-pine belt of the South had been acquired by Louisiana through the purchase of a two-thousand-acre tract of timberland near Forest Hill, in Rapides Parish, to be used to demonstrate the feasibility of bringing back to forests the cut-over lands of the South.

The land is known as the H. S. Burrows tract, and serves admirably to illustrate the lessons which the conservation and reforestation advocates desire to impress upon the people of Louisiana. The new state forest was cut over about twenty years ago, and now contains about two million feet of merchantable timber. It is hoped that this will be the beginning of a series of state-owned forests in Louisiana, and it is anticipated that 5,000 additional acres will be acquired soon.

Col. W. H. Sullivan, of the Great Southern Lumber Company, announced at the meeting that his company will furnish to



A PEG-LEGGED MAN FROM THE
LAND OF THE MIDNIGHT SUN

BY AGNES D. GARRETSON

This freak tree, so amazingly like a man, grew on the banks of the Yukon River near the Rampart Rapids. An old steamboat captain on the river told me that many a boat pulled in to shore at sight of this face peering from the brush near the rapids. The facial contour is formed by knots on the head-shaped surface. The gray hair is really white moss, which grows abundantly in the north, of the variety upon which reindeer feed. Even the hairy tuft which forms the mustache is a growth of moss, although some one with a misplaced sense of humor has touched it up with stove black.

The tie, the shoe, and the cork tip on the stem of his pipe are the only artificial aids used to complete this wooden figure of a man. He was finally brought down to the town of Tanana by an enraged prospector, who was nearly lost in the rapids as a result of turning back to *rescue* the effigy.

The spot where the tree grew was about ten miles from the famous cabin of Rex Beach, near Rampart, Alaska, where that now famous author wrote some of his best Alaskan stories.

residents along the Lafitte cut-off of the old Spanish trail 10,000 young crepe myrtle trees, to be planted along that portion of the highway.

Mr. J. K. Johnson, of Bogalusa, was elected President, with eight vice-presidents at large; Henry E. Hardtner, of Urania, was named as chairman of the Executive Council, and V. H. Sonderegger, of New Orleans, was elected Secretary-Treasurer.

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For further information and catalogue address: The Dean of the School of Forestry, New Haven, Connecticut, U. S. A.

SALE OF TIMBER ON THE COCONINO

Approval by the United States Department of Agriculture of the timber sale known as the Mormon Lake and Sawmill Springs Unit, on the Coconino National Forest in Arizona, totaling 80,000,000 board feet, has been announced. The average price, all species, is \$2.25 per thousand feet. Practically all of the timber is western yellow pine.

The contract period extends over five years, and the purchaser may remove the timber at not to exceed the rate of 24,000,000 feet per annum, which is in accordance with limitation of cut set in the management plan for the Coconino Forest.

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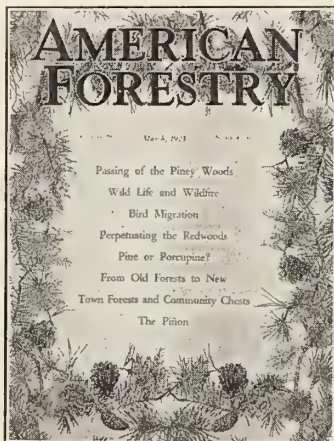
It is estimated that the Apache National Forest and the adjoining Indian reservation, contain over 300 miles of trout waters, and that these are about 90 per cent of the trout streams in Arizona. It is no wonder, therefore, that one hears in Springerville that the trout streams and the mountain scenery are, after all, the Apache's greatest potential asset. Good roads will undoubtedly make this the fisherman's paradise of the state and restocking of the streams will follow.

NEW ALASKAN LAWS

The Alaskan legislature, which recently adjourned, passed three bills bearing directly on the work of the Biological Survey of the United States Department of Agriculture. One provides for the branding or marking of reindeer by owners and the recording of the brands or marks; another for the registering of brands in connection with the propagation of blue foxes and for marking or tagging skins; the third appropriates \$10,000 for procuring and transporting deer to the islands of Prince William Sound, and to Kenai Peninsula and adjacent waters, and for the introduction of goats on Baranof and Chichagof Islands. A bounty of \$1 each on eagles killed in the territory was provided for, and the license tax on furs shipped out of the territory was changed, reducing the tax on many skins.

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THE THWARTED SEED TREE

Here is reproduced, through the courtesy of the New York State Forestry Association, a photograph of the youngest pine seed tree of which they have record. It was grown in a state nursery, planted on dry, sandy soil when four years old, and when eight years of age yielded a crop of twelve cones. It was considered that a discovery

In the preparation of the plan a landscape architect of high standing was employed and a detailed study of the campus made. Every tree was located, accurately platted, and a record made of its size, condition, and suitability for the given site. The same sort of study was made of the campus shrubs and smaller plants. Then followed the working out of a plan of replacement, designed to secure the best tree and landscape effects. Except for dead trees and those seriously hampering desirable trees, the plan provides for gradual removal, so that there will be a minimum disturbance of the tree canopy. A gradual improvement will thus be brought about, not only without marring the beauty of the campus, but with assurance of a better effect.

An outstanding feature of this plan was the enthusiasm which it stimulated among the class members, college authorities, and the local public. While realizing that results would necessarily come about gradually, they all saw tremendous promise in a project where the campus trees are handled under a systematic and harmonious plan. Progress under the plan will naturally depend on the extent to which the college classes will individually contribute toward it. But, after providing for the survey, the plat and the working plan, the class of 1903 had sufficient funds left with which to start some actual tree and shrub planting and the memorial is therefore already an integral factor of the college life.



of some importance had been made, but the seed extracted from these cones was found to be infertile.

Foresters have determined, after long study and observation, that a white pine will not bear fertile seed until it is upward of twenty years old. The pine here shown is doubtless following out the methods adopted by many plants when suddenly confronted with adverse conditions, injury, or thwarted hopes. It is undertaking to save the species by casting its seed. Nature has informed this tree that, in so far as itself is concerned, there is small hope of great future progress—the ground is too dry, the rainfall too limited, the competition too severe. Perhaps, also, the tree has received some vital injury which is not apparent to the eye. This tree, therefore, may fail as a yielder of timber, but has not failed to impress us with its example of fortitude.

A CAMPUS TREE MEMORIAL

A new and unique form of memorial was dedicated this spring to Dickinson College, at Carlisle, Pennsylvania, by the class of 1903. The memorial is called the "Campus Improvement Project," and consists of a detailed and skillfully prepared plan for tree and shrub growth on the college campus. A graphic expression of it may be found in a neatly prepared plat, handsomely framed, and now adorning the walls of the college.

PLANTING TREES

More than a year ago Wythe Williams, writing from Paris of Clemenceau, whose home he had visited on the seacoast, told this story of the old man:

"But I love it," he said. "I love this place. I am of it. If one says one loves a woman, well; that is all; one can add nothing. It is like that when I say that I love this place, where I was born."

He pointed to the forest. "I have watched that forest grow—these great pines. Eighty years ago there was not a single tree there." He stopped and picked a little flower from the sands—a delicate flower with exquisite perfume. "See; that grows here," he said, handing it to me. "It is called 'the pink of the dunes.' And there are immortelles, too." He pointed about him. "And the heather; and over there by the house, you see, I am raising a plantation of pines from the sand."

He stopped speaking for a moment; then continued with one of the few touches of solemnity that I have ever heard from him. "I am almost 80; but what if I die a year from now, or a month from now? I am going to give myself the pleasure of planting trees, to see that they take root and grow."

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THE WANING HARDWOOD SUPPLY

During the last year or two there has frequently been sent to the Forest Products Laboratory a dark reddish brown wood with the request that it be identified. The wood seemed to puzzle millmen and lumber dealers. In one case it was reported as being sold as "swamp walnut." A microscopic examination showed such pieces to be willow.

This rather recent introduction of willow on the lumber market probably is due to the present practice of lumbermen of cutting anything that will make lumber; hence unusual species may occur with the more common run of lumber. Some other uncommon kinds of lumber occasionally submitted to the laboratory for identification are hackberry, plane tree, persimmon, ironwood, sourwood, magnolia, madrona, box elder, honey locust, coffee-tree, butternut, slippery elm, incense cedar, Alaska cedar, yew, etc., not to mention numerous foreign species.

FIRE PREVENTION BROADCASTS

Radio talks on the prevention of forest fires are being broadcasted every two weeks from the Portland, Oregon, office of the Forest Service, United States Department of Agriculture, through an arrangement with the *Portland Oregonian*. Definite dates have been fixed for these talks, which, according to estimates, reach from 10,000 to 15,000 people. A radio release on some phase of the work of the Forest Service is also broadcasted once a month from Washington.

BIG SALE OF FOREST TIMBER MADE

The sale of 685,000,000 board feet of timber on the Cascade National Forest, in Oregon, has just been completed, according to an announcement made by the Forest Service.

This is the largest body of Douglas fir timber ever sold by the Forest Service, the second largest being the Sauk Unit sale of 235,000,000 board feet of Douglas fir, made about a year ago from the Snoqualmie National Forest, in Washington. This Cascade sale compares in size with the recent sale of 890,000,000 board feet of yellow pine from the Malheur National Forest, in eastern Oregon.

LIGHTNING DEADLY MENACE TO FORESTS

Eighty-nine per cent of all the forest fires started by lightning in the National Forests of California occur during the months of June, July, and August, according to report by S. B. Show and E. I. Kotok, of the San Francisco headquarters, United States Forest Service. The number of fires set per storm is said to range from a few to nearly 350, and these are concentrated in well-defined zones. In the decade 1911-1920 lightning was responsible for over 41 per cent of the 10,527 fires that occurred in the National Forests of the State.

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AMERICAN FORESTRY

An Illustrated Monthly Magazine

Devoted to

Forests and Forest Life

OCT 2 1923

VOLUME 29

October, 1923

NUMBER 358

With Harding in Alaska

Forests of the World

Destruction of Western Waterfowl

Outrunning a Grizzly

Tree Studies in Blueprint

Grouse and Quail

Logging Camp Humor

The American Forestry Association

Washington, D. C.

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FOREST RECREATION as a growing need in the

social development of the nation and a God-given birthright of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

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AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

OCTOBER, 1923

No. 358

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CASCADE CREEK FALLS TYPIFIES NATURE'S RUGGED ART IN COMBINING POWER AND BEAUTY IN ALASKA. THE FALLS MARK THE LAST PLUNGE OF CASCADE CREEK IN ITS RACE TO THE TIDEWATER AND IS ONE OF THE BEST WATER-POWER SITES IN THE TONGASS NATIONAL FOREST

AMERICAN FORESTRY

VOL. 29

OCTOBER, 1923

No. 358

With Harding in Alaska

By CHARLES G. ROSS

Washington Correspondent of the St. Louis Post-Dispatch

THE preconceptions of most of those who went to Alaska with the late President were rudely shaken by contact with the facts regarding that amazing territory. Some of us, I suspect, had been thinking of Alaska mainly in terms of snow-shoes and sledges, ice and igloos, the gold rush into the territory and the supposed rush out of it when the gold crop failed. Some, who had gained other impressions than those to be had from fictional thrillers, who knew that Alaska held great wealth in mines, fisheries, and forests, believed that these resources were being kept under lock and key by an illiberal policy foisted on the Government, against the best interests of Alaska and the nation at large, by Gifford Pinchot and the present active leaders, including the Secretary of Agriculture and the Chief Forester, in the conservation movement.

Alaska, in short, was seen by some as a frozen chunk of earth, attractive only to adventurous men who could dig gold out of it and make a quick getaway, and by others as a treasure-house whose door had been sealed against legitimate enterprise by a lot of short-sighted bureaucrats.

There was much revamping of opinion to be done, as the true picture of Alaska, day by day, was unfolded before the President and his party. The President candidly admitted, in an expression stamping him as a man who had grown in his office, that he had been mistaken in an important particular. His trip was worth while if only because it enabled the truth about Alaska

and Alaskan policies to be given wide publicity. It will be, indeed, unfortunate if the significance of the trip, which President Harding set forth in his fine Seattle speech—the work of the thoroughly good reporter that he was—is permitted to be lost in the rush of events set in motion by his death.

Alaska is no frozen, forbidding area; it is a scenic wonderland. Its glaciers that rumble and roar; its green-clad mountains flecked with snow; its waterfalls, seen by the President as “ribbons of falling water” tossed by the Creator “like confetti at a carnival”; its limitless forests; its sunsets over the blue, island-studded waters of the inside passage—all these constitute a scenic fare that will whet the appetite of the most jaded traveler.

“There can be none,” said President Harding, “to dispute to Alaska pre-eminence as the empire of scenic wonders. One never wearies of them. . . . It brings upon one a new conception of the mightiness of creation and proves Nature’s plan of combining might and magnificence.” Of the journey through the inside passage, he said: “There is no sea trip in the world to equal it. There is

no lure of mountain, stream, valley, and plain to surpass it anywhere.”

Equally with the notion that the face of Alaska wore the bleak aspect of a deserted mining camp, we had to revise our ideas of its climate. Preparatory to the trip, on the advice of a seafaring man, presumed to be familiar with the country, some of us had equipped ourselves with



Underwood & Underwood

PRESIDENT HARDING'S PARTY STOPPING FOR SUPPER AT A TYPICAL ALASKAN ROAD-HOUSE AT TUNNEL, JUST BEFORE LEAVING THE TERRITORY AND A FEW DAYS PRIOR TO HIS BREAKDOWN

sweaters and flannel shirts, raincoats, heavy gloves, goshes and leggins. Most of these impedimenta were brought back to the states untouched. The only snow that we saw was on distant mountains; the only ice was in glaciers and water glasses; the only igloo we found was a white man's lodge at Nenana, into which the President was initiated.

We learned that the only proper complaint that can be brought against the Alaskan climate is on the score of heavy rainfall in the summer time. This had to be told to us, for during the three weeks of the Alaskan trip we had just one rainy day. Juneau, the capital, the one spot where the Alaskan climate failed to perform at its best for the President, suffered far more from its disappointment at not being able to put its best foot forward than we did from a little wetting.

The rain, incidentally, developed evidence that inter-city rivalry, like that between San Francisco and Los Angeles, is not wanting in the territory. Juneau's chief aversion is Anchorage, which aspires to be made the capital. It hurt the loyal Juneau boosters to think that Anchorage, also on the President's calling list, might profit by fair weather. To stave off that calamity if possible, they put an advertisement in the Juneau paper: "Let's pray for rain in Anchorage, too." All of which goes to show that human nature in Alaska is the same as anywhere else.

What we needed at Fairbanks, our farthest north, 125 miles from the Arctic Circle, was not winter coats and

the territory, the portion containing most of its resources in forests, minerals, fisheries, and farm lands, is south of the Arctic Circle. Within this portion, which he correctly described as "temperate-zone Alaska," is an area nearly three times that of Finland, with a climate milder and more equable than Finland's. Two of Europe's great cities, Christiania and Petrograd, are on the same parallel of north latitude as Seward, Alaska, while "Glasgow, one of the world's greatest workshops, with over a million inhabitants, if translated in its own latitude to the Pacific coast of America, would be the metropolis of Alaska!"

"It is not possible," continued the President, "that Americans . . . will fall into error about such an empire as Alaska. I cannot speak of comparative rainfall, but the climate of Alaska, as to temperature, is no more severe than in these largely developed European sections. Indeed, it is not more severe on the coast than in the greater part of our northern mainland. The snow is more evident, but the extremes of cold are often no more trying than in Washington, D. C., and in most of the coast cities."

So much for Alaskan scenery and climate. What of the assertion we had heard so often in Washington, that the 15 per cent decrease in population shown by the census of 1920 denoted that the territory was being strangled to death by governmental red tape? This conclusion failed to stand the test of investigation. The decline in the total number of inhabitants reflected only the deflation which is inevitable after any period of temporary exploitation. What happened to Skagway, Alaska, which now



NOT THE LEAST OF ALASKA'S RESOURCES IS HER REINDEER. BEGINNING WITH A BAND OF TEN, BROUGHT FROM SIBERIA THIRTY YEARS AGO, ALASKA NOW CONTAINS OVER TWO HUNDRED THOUSAND REINDEER. THIS SHOWS HER LARGEST HERD, ON CAPE PRINCE OF WALES

overshoes, but palm-leaf fans. The temperature in the afternoon of the day we were there, July 16, was 94 degrees. Three persons were prostrated by the heat during a public meeting which the President addressed in the open. Under the "midnight sun," at 11 p. m., we inspected the flower beds and the wheat fields of the Government's agricultural experiment station near Fairbanks.

The President, in his Seattle speech, gave some interesting data to disprove the common fallacies regarding Alaska's climate. He pointed out that three-fourths of

has fewer than 500 people, as compared with ten or fifteen thousand at the height of the gold rush over White Horse Pass, is the same that always happens when a mining boom collapses. Alaska has simply been shaken down to the normal elements of a population by the loss of "floaters."

The decrease, moreover, as President Harding noted in his report, took place in the decade when the war demoralized the whole world and when many other sections, including some of the foremost of the American states, lost population. "Judgments adverse to Alaska," said the

President, "will not be based on such adventitious conditions, save by the unintelligent or by those who would cry down the country's availability as a land of homes in the hope of getting it turned over to wholesale exploitation on a scale that would ruin it for all the future."

The census figures show that Alaska, so far from having lost ground, has made a substantial gain in the permanent, home-building elements of population. The total female white population increased from 6,066 in 1910 to 7,297 in 1920—a gain of 20 per cent. In 1910 there were

"I must confess," said the President, "I journeyed to Alaska with the impression that our conservation was too drastic, and that Alaskan protests would be heard on every side. Frankly, I had a wrong impression. Alaska favors no miserly hoarding, but her people, Alaskan people, find little to grieve about in the restrictive policies of the Federal Government. There is not unanimity of opinion, but the vast majority is of one mind. The Alaskan people do not wish their natural wealth sacrificed in a vain attempt to defeat the laws of economics, which are everlasting and



AT THE HEAD OF THE NORTH ARM OF PORT SNETTISHAN STANDS THE FIRST PULP MILL BUILT IN ALASKA. BACK OF IT, AS A PERMANENT SOURCE OF PULPWOOD, ARE THE GREAT FORESTS OF THE TONGASS NATIONAL FOREST

five times as many white men as white women; in 1920 there were fewer than three times as many. Dwellings in the territory increased from 16,612 to 17,037. The number of families increased from 17,809 to 18,352. The number of school teachers more than doubled.

"Alaska," said Reporter Harding, "is once more gaining in everything that testifies prosperity . . . Anyhow, we have come, in these later days, to appraise population by its quality rather than quantity, and Alaska will loom big in any quality test."

But the most significant discovery of the Harding fact-finding expedition was not the charm of Alaskan scenery, nor the temperate character of its climate, nor even the groundless nature of the assumption that the census returns of 1920 spelled Alaskan decadence. The great discovery was the fallacy of the argument that Alaskan development is being thwarted by the conservation policies of the National Government. Item by item, the President showed in his Seattle report that the resources of Alaska are open to use on fair terms.

Most important of all his findings was that relating to the forest policy. It was in this connection that the President admitted he had been mistaken and definitely aligned himself with Secretary of Agriculture Wallace, Chief Forester Greeley, and the others of the conservationist school. Without reservation, the President declared against the "looting" of Alaska and for the policy of the Forest Service, that permits reasonable utilization of the forests while providing for their perpetuation. I think there is hardly any member of the President's party who did not share his thought on this subject.

unchanging. I fear the chief opponents of the forest policies have never seen Alaska, and their concern for speedy Alaskan development is not inspired by Alaskan interests."

It is possible here to give but a few of the outstanding facts and figures in an imposing array that might be marshalled to show the great size and the infinite possibilities of Alaska's forests. Visitors to the territory who see the forests only from the deck of a ship are likely to come away with a wrong impression of the character and extent of timber. Even some of the Alaskans themselves, familiar only with the comparatively poor growth along the shorelines, are inclined to minimize the commercial possibilities of the forests. To get an adequate conception of their value, one must go back into the forests and see the density and excellent quality of the spruce and hemlock. Let him do that, and then talk to a forest ranger who has ridden a seagoing motor-boat on the waterways in and around the 15,000,000 acres of the Tongass National Forest, and he will come away from Alaska convinced that the territory is, indeed, as prophesied by the Department of Agriculture, destined to be one of the great paper factories of the world.

The total area of the Alaskan National Forests is 20 million acres, or less than 6 per cent of the area of the territory—a comparison which indicates the absurdity of the statement one sometimes hears, that the Government has locked up practically the whole country. The Forest Service estimates that the forests contain 80 billion board feet of lumber, chiefly spruce and hemlock, nearly all of it within two or three miles of a network of sea lanes.

Between 1906 and 1922, inclusive, more than 500 million board feet were cut from the forests, furnishing a revenue of \$730,000. Twelve sawmills and two shingle mills are now operating on National Forest timber.

It is estimated that the forests contain 100 million cords of paper-making woods and can furnish a perpetual yield of 1½ million tons of print paper, or 60 per cent of the present total consumption of such paper in the United States. Since water power is as necessary to paper-making as pulpwood, the Forest Service has undertaken a survey of power sites, and thus far has located 44, capable of producing 400,000 horsepower. The cost of developing the larger sites ranges from \$40 to \$110 per horsepower.

In putting up the bars against unrestricted exploitation of the National Forests of Alaska, the Government is profiting by the lessons of the past. Vast areas in the United States have been cut over without regard to reproduction. Today, in the New England States, in New York, Pennsylvania, and the Lake States, are barren lands where once stood splendid forests. Similar destruction has been wrought in the Pacific Northwest and the pine regions of the South Atlantic. The policy of the Forest Service has been framed with a view to perpetuating the forests of Alaska and putting the lumber industry of the territory on a solid and permanent basis. Fourteen large paper-manufacturing units have been laid out in the Tongass, each with a water-power site and with sufficient timber to run a mill of from 100 to 200 tons daily capacity for 60 to 70 years. At the end of that time the lands first cut over will be ready with another crop. Thus the supply will last, in the words of a forest official, "from the time the mill starts running till the land sinks beneath the sea."

Pulpwood cut from a forest unit by a lessee, under the terms of his contract with the Government, is paid for at an average rate of 40 cents a cord. This price holds good during four years of pre-

liminary work allowed him to get his plant started and five years of actual manufacture. At intervals of five years thereafter the price may be redetermined, but at no time may it exceed the average current market price in Alaska. The form of contract was highly commended by the President, who worked out an interesting computation that the manufacturer pays about 53 cents for wood

and water-power rights to make a ton of paper worth \$70 in the larger markets.

"Can it be," he asked, "that three-fourths of one per cent for these two raw materials is so heavy a tax as to paralyze the industry?" I reply that it is not, and that no such charge is seriously made by intelligent

and sincere people. . . . I venture, with some knowledge of conditions in paper-making countries, to state that no better contract—indeed, none so good—can be secured in any of them.

Everywhere we went in Alaska we heard words of praise for the Forest Service. The conviction was manifest that the policy of this service was working toward the permanent economic good of the territory. That it is not an illiberal policy in its effect on private initiative was made strikingly evident just recently, after the Harding tour, by the consummation of a sale to a San Francisco company, under the Forest Service contract, of 334,000,000 cubic feet of timber, approximately 3,340,000 cords, in the Cascade Creek Unit of the Tongass National Forest.

No; Alaska has not been locked up by the bureaucrats. There will be, as the President said, no "hothouse growth," but a steady development. Among those who saw Alaska with him there was general approval of his

matured conclusion, that "reckless sacrificing of resources," which surely would follow the removal of the present moderate restrictions, must not be permitted.



Courtesy of L. C. Pratt

THE SEAGOING STEED OF THE ALASKAN FOREST RANGER, A TYPE OF MOTOR-BOAT WHICH SERVES HIM AS OFFICE, CAMP, AND MEANS OF TRAVEL COMBINED



The Forests of the World

A Glance at the Timber Resources of the World and America's Position in Relation to Foreign Forests

By WILLIAM N. SPARHAWK

IT IS rather startling to realize that the United States uses two-fifths of the world's consumption of timber—22½ billion cubic feet of a total of 56 billion. Endowed by Nature with a seemingly unlimited supply, we have developed into the greatest wood-using nation, and in that fact lies in no small degree the foundation of our national efficiency and prosperity. Without abundant supplies of cheap timber, the great food-producing regions of the Middle West could never have been settled as rapidly as they were, our railroads could not have covered the country with a transportation network unsurpassed elsewhere in the world, nor could our wood-using industries have sent their products to every country of the globe. Because timber always has been so easy to get, few people have realized the extent to which continuation of our prosperity and maintenance of our present standards of living depend upon ready access to abundant supplies of wood.

Having cut out the bulk of the good timber in the Northeast, in the Lake States, and in the South, and already making heavy inroads into the last great reservoir on the shores of the Pacific, it behooves us to begin making inquiry as to what is coming next—where shall we look for timber when that in Washington and Oregon has gone the way of the white pine of the East and the yellow pines of the South? Why should we worry? you ask. When our timber is gone, if that ever happens, we can easily

import it from other timber countries. But can we? The purpose of this article is to throw a little light on that problem.

At first glance, the statistics of the world's forest resources leave the impression of unlimited supplies, concerning which there can be no occasion for alarm for generations to come. Altogether, there are 11,700,000 square miles of forest, or 4⅓ acres for every man, woman, and child in the world. But, is forest growth keeping pace with increasing population? It is not. Even if this area be discounted by one-fourth, to allow for the poorer types of forest, incapable of producing commercial timber, the remaining area, under proper treatment, could yield some 350 billion cubic feet a year, or more than six times the present consumption. At present, however, only 10 to 15 per cent of the total area, and that not the most productive potentially, is receiving the proper treatment. The other 85 to 90 per cent is still regarded as a timber mine, to be left idle after the timber now standing has been ex-

tracted. The total annual growth of timber now is something like 38 billion cubic feet, or only two-thirds of the world's annual cut.

Even if there were a surplus of growth, however, it would not offset the consumption, unless it were of the same kind of material or usable for the same purposes as that consumed. What is needed is timber to take the



A DEODAR FOREST, INDIA

This tree (*Cedrus deodara*), also called Himalayan cedar, is one of India's largest and most important conifers.

place of the pines and Douglas fir which form the backbone of our lumber industry and furnish the lumber for our houses. Let us consider what the world has to offer.

The forests of the world may be broadly classified into three principal groups. First in present importance come the forests of cone-bearing trees, the "softwoods." These are the pines, spruces, firs, hemlocks, larches, cypresses, and similar trees, which are widely distributed in the cooler regions over most of the world. Then come the broad-leaved, or "hardwood," forests of the temperate regions, usually composed of more or less complex mixtures of such species as the oaks, maples, chestnuts, beeches, ashes, elms, and birches. The third class includes the tropical forests, composed almost exclusively of broad-leaved trees and palms. Such are the forests of the great Amazon basin, of the Congo, and of the Philippines and southeastern Asia.

TROPICAL FORESTS THE GREATEST IN THE WORLD

Greatest in extent are the tropical forests, which cover some 5,500,000 square miles, nearly as much as all other forests combined. Located to a large extent in regions

where the population is rather sparse and where requirements for wood include little more than a minimum amount of fuel for cooking and a few small timbers for house frames and native implements, boats, and carts, these forests have been hitherto a minor factor in the world's timber supply.

The tropical countries use less than 6 billion cubic feet of wood a year, or only about 10 per cent of the total consumption, and only three-fourths of a billion of that is of the larger sizes, classed as saw timber—3 per cent of the world's consumption. Nearly one-fourth of their saw timber is supplied by imports of northern softwoods, while their average annual export to the northern countries has been well below 100 million cubic feet, or a little more than half as much as the world uses in one day.

The contribution of the tropical forests to the needs of the great wood-using countries has consisted almost entirely of special-purpose woods, such as mahogany, ebony, and rosewood for fine furniture and cabinet-work, logwood and Brazilwood for dyes, and teak and greenheart for ship timbers. Even more important than timber, in many instances, have been the secondary products—



THE MOUNTAIN ASH (*EUCALYPTUS REGNANS*) IS AUSTRALIA'S LARGEST TREE

It is likewise one of the most important and abundant trees of the Victoria bush. Australia's forests are principally hardwoods of the eucalyptus and acacia families. In point of clear length of trees and amount of timber to the acre, some of these forests rival our Pacific coast stands.



EVIDENCE OF HOW THE SWISS GROW FORESTS

A stand of Silver Fir, naturally regenerated, adjacent to an old forest at Winterthur.

rubber, oils, resins, tanning materials, medicinal products, fibers, and nuts. The public mind has associated tropical forests with these products so long that it has failed to realize that they also contain large quantities of timber suitable for more ordinary, every-day uses.

According to numerous investigators, however, the tropics contain in abundance woods suitable for every use to which our northern hardwoods are put, as well as for most of the softwood uses, including pulp. As the temperate hardwoods become depleted, wood-using industries will look more and more to the tropics for substitutes. Already, representatives of many industries of the United States as well as of Europe are quietly investigating supplies of tropical woods for certain special uses—uses which hitherto have been supplied entirely by domestic woods.

It may be asked why, if they contain such vast stores of usable timber, these forests have played so small a part in the world's timber trade. The reasons are several. In the first place, the wood-using countries have had timber of their own, or could get from their neighbors timber of the same or similar kinds to which they were accustomed. The tropics are distant and undeveloped, the labor supply is uncertain and apt to be inefficient, transportation facilities have been crude or lacking, and the forests are composed of an endless diversity of kinds, practically all unknown to the northern consumers. The kinds of timber that have been exploited heretofore, such as mahoganies, cedar, rosewood, ebony, and lignum-vitæ, usually occur scattered through the forests in somewhat the same way as black walnut occurs in this country, with the result that costs of log-

ging, and consequently of the resultant products, have been extraordinarily high.

In the more densely populated tropical countries, enormous areas of forest have been destroyed in clearing land to grow food or to make pasturage, while still other areas have been denuded to furnish fuel. In general, however, the great bulk of these forests, especially those of the Amazon basin (almost two million square miles) and of the Congo, are practically intact except for the extraction of by-products. As transportation facilities in the tropics are developed, they will almost certainly be accompanied by growth of local populations, agriculture, and industries, which will require many times the present consumption of timber. At the same time the timber-producing areas will be

diminished, both legitimately, for other uses, such as agriculture, and by the wasteful, reckless methods of exploitation which seem to be inevitable with the opening up of any new forest region. It is rarely, or never, the case that a people begins to take care of its forests until it feels the pinch of shortage. It does not seem likely, therefore, that the forests of the tropics will play a very large part in supplying the world's needs for common construction timber within the next few generations, if ever.

The temperate hardwoods, which occupy slightly less than 2,000,000 square miles, or one-sixth of the total forest area, supply about 23½ billion cubic feet, or 42 per cent of the total consumption of wood. A large proportion of it, however, is fuel wood, for which the hardwoods in general are more satisfactory than the conifers, and only 5¾ billion feet is saw timber, slightly more than one-fifth of



EUROPEAN OAK IN THE FOREST OF FONTAINEBLEAU

The timber supply of France amounts to 35 billion cubic feet, of which less than one-half is of sawlog size.

the world's consumption. The United States, with more than 700,000 square miles of such forests, originally had a larger hardwood area and more and better hardwood timber than any other country outside of the tropics. Almost 500,000 square miles of it has been cleared away to make farms, and a large part of the most valuable timber has been culled from the remainder.

Although in some localities the hardwoods are encroaching on the conifers, especially where they occur in mixture, the temperate hardwood area in general tends steadily to decrease. These forests are usually on the better soils and in regions with milder climates than the bulk of the conifers, as well as closer to the densest populations, consequently are more likely to give way to agriculture. Being close to the consumers and largely in private ownership, where early returns are especially sought after, the tendency is for most of the hardwood forests, after they are once cut over, to yield chiefly fuel wood or other timber which can be grown on short rotations, and very little saw timber. As already pointed out, however, there is no great cause for concern in this; for, although it will mean somewhat higher prices for hardwood products, satisfactory substitutes can be obtained in abundance in the tropics.

SOFTWOOD FORESTS UNEQUAL TO DEMAND

The most important sources of timber for construction and for industrial use—the class of material that is absolutely indispensable for modern civilization—are the softwood forests. With a few exceptions of practically only local importance, such as the Paraña pine of Brazil, the cipres, alerce, and pino of Chile, the cedar and yellowwood of southern and eastern Africa, and the kauri of New Zealand, the coniferous forests are

confined to the northern hemisphere, and largely to the cooler regions. Altogether, they cover slightly more than 4,000,000 square miles, a little more than one-third of the total. Two-fifths of this area is in North America, one-third of it in Asia, and all of the remainder but 5 per cent in Europe.

The north temperate zone has three-fourths of the world's population, and, both for climatic reasons and because of differences in economic development, consumes vastly more wood per capita than the inhabitants of the warmer regions. Here is consumed 96 per cent of the saw timber and 80 per cent of the firewood used in the world.

The conifers commonly grow straight, with long trunks fairly clean of branches, so that they yield large quantities of saw timber in proportion to their total volume. Moreover, their wood is usually fairly soft, light, strong, and easy to work and to transport by land or water—much more so than many of the hardwoods. They commonly occur in extensive stands composed of one or only a few species, in contrast to the hardwoods, of which dozens of kinds are frequently mingled. For these reasons they are peculiarly adapted to furnish large quantities of excellent material at fairly low cost, and this is why they have always held first place in the world's timber utilization.

Practically half of all the wood cut, or about 27½ billion cubic feet, comes from the coniferous forests, and of the saw timber the proportion is even greater, amounting to 75 per cent, or 19½ billion cubic feet. In spite of the growing substitution of other materials for wood in many of its uses, new uses are being devised every day, and the world's requirements for timber are constantly mounting. Railroad ties and telephone poles were unheard of a century



A YOUNG FOREST IN JAPAN

A glimpse into a Japanese forest of Sugi (*Cryptomeria japonica*) 40 years old. Japan has available for industrial purposes 768 million cubic feet of this timber.

ago, while the pulp industry, which is the foundation of the manufacture of paper and cellulose products in a multitude of forms, has developed very largely within the memory of men still in the prime of life. If the rate of increase during the last few decades is maintained, the world's requirements for saw timber will double in the next 50 years.

Already the softwood forests are proving inadequate, as they are now handled, to meet the demands. The annual increment of timber is not over four-fifths of the amount cut, and the softwood countries are fast cutting into their capital. Vast areas of softwood land are denuded, idle and unproductive, and the areas are constantly increasing. The industrial countries are all becoming concerned regarding future supplies of softwood timber, and nearly all are laying their plans not only to increase their own production, but also to secure control of undeveloped supplies in other countries. It is a certainty that competition for the remaining reserve supplies will be exceedingly intense. Obviously, a country which can

grow its own softwoods will be much more sure of meeting its requirements than one which depends on importation.

Over extensive areas of softwood forests—for instance, in the Rocky Mountains, northern Canada, Norway, Finland, Sweden, northern Russia, and northern Siberia—growth is very slow in comparison with the tropical forests or even most of the temperate hardwoods. In other regions, particularly the warmer, fairly humid softwood belts of western and southeastern North America and parts of central Europe and eastern Asia, growth is rapid. Altogether it is estimated that if the softwood land were all utilized for growing new crops of timber, it could yield continuously about three times the present annual cut.

AMERICA'S TIMBER IMPORTS INCREASING

Unlike the hardwood forests of both the temperate and the tropical regions, the softwoods need never decrease greatly in area. The land they are on is mostly too poor for successful agriculture, or located in regions where it is not likely ever to be required for farming. Whenever the forest is destroyed beyond possibility of natural re-

generation, the land is likely to remain idle, as has happened with millions of acres in the United States, Canada, and other countries, until economic pressure compels its restoration to forest by artificial means.

For years the United States has been an exporter of softwoods and she still exports large quantities, but for several years has imported almost an equal amount in other forms, particularly wood pulp and pulpwood. Within a very few years the balance is likely to be definitely on the side of imports. The only countries which have considerable surpluses of softwoods are Siberia, Finland, Sweden, Canada and possibly northern European Russia. Sweden's exports consist to a considerable

extent of pulpwood and pulp, while Canada's pulpwood supply is already causing her own pulp industry some concern and her forests of large saw timber, principally those in British Columbia, probably will not long outlast our own in Washington and Oregon. Finland cannot now meet the demands made by the near-by importing countries of northern and central Europe, and the wide-spread



HOW GERMANY KEEPS UP HER WOOD SUPPLY

A Norway Spruce forest under management at Siegodorf. The opening in the forest is made preliminary to a well-planned cutting.

forests of Siberia will have to fill the rapidly expanding needs of her own people as the country settles up, besides furnishing timber to the densely populated countries of eastern Asia.

The prospects appear rather slim, therefore, for our obtaining adequate supplies of softwoods by importation, even if we were willing to stand the enormous costs of transportation and to be dependent upon the bounty of foreign countries for such an essential raw material. What shall we do about it? The answer should be obvious. We have nearly 300,000,000 acres of softwood forest land, capable of producing enough timber every year to meet our present requirements if even moderately well cared for, and if intensively managed a considerable surplus. At least 70,000,000 acres of this area is now idle, denuded by lumbering and fires, with no effort being made to grow timber crops upon it. About 100,000,000 acres is still virgin forest, diminishing every year, and the remainder, some 125,000,000 acres, is more or less restocked, by accident, with younger timber. Much of it is of inferior grade or in stands too open to make good saw timber.

Although there may be local shortages which may cause considerable inconvenience and disturbance to cer-

tain industries, as is already happening with the pulp industry and locally with the box manufacturers, it seems hardly likely that our forests can ever fail to supply sufficient softwood timber of the smaller sizes, such as are satisfactory for making pulp, box boards, mine timbers, posts, and similar products. With large, high-grade construction timber, however, it is different. Pulp and box boards can be grown in 20 to 50 years, depending on the species and region. Large saw timber, on the other hand, requires 75 to 100 years to grow, even under the most

favorable conditions, and in some regions much longer. The saw timber that will go into buildings in the year 1975 is already growing somewhere in our forests; it will not come from trees we may plant this year or next. This is why the protection and proper handling of the existing forests is for the present far more essential, though possibly less spectacular, than an extensive program of planting up denuded land.

[Photographs by courtesy of the United States Forest Service.]

"A person who has not had an intimate friendly acquaintance with some special tree has missed something from life."—*Anna Botsford Comstock.*

"To preserve wild animals implies generally the creation of a forest for them to dwell in or resort to. So it is with man."—*Thoreau.*

A Living Memorial

Sequoia in Giant Forest Named for President Harding

By JOHN R. WHITE

ON August 10, 1923, at the hour of the funeral at Marion, Ohio, the largest sequoia in the Congress Grove of Big Trees at Giant Forest, Sequoia National Park, California, was dedicated with appropriate ceremonies to the memory of the late President, Warren Gamaliel Harding.

The Warren Harding Tree is situated in the heart of the Congress Grove, about one mile from Giant Forest center and near the William McKinley and Abe Lincoln sequoias, which it equals in size and majesty, being approximately 32 feet in diameter at the base and 280 feet high. The crown has the most rugged branches of any tree in Giant Forest, one branch 200 feet above the ground being over 8 feet in diameter.

Over 500 people attended the unveiling of the sign placed on the tree. The sign and a large photograph of the late President beneath it were veiled by the American flag, which was withdrawn by Mrs. Morton W. Fraser, a cousin of President Harding.

Neither pharaoh nor emperor has ever had as enduring a monument as the plain American citizen who was our 29th President. When the pyramids are crumbling to dust the Warren Harding sequoia will be but swelling to a fuller growth and majesty.



Photograph by courtesy of the National Park Service

THE WARREN G. HARDING TREE



IN A VERY FEW MINUTES THE QUIET OF THIS SUNDAY MORNING SCENE IS DUE TO BE RUDELY SHATTERED, FOR MISCHIEF IS AFOOT AND SOME FIENDISH THING ABOUT TO BE PERPETRATED ON THE QUIET SLEEPER. THEN THE FUN WILL BEGIN

Some Odds and Ends of Logging Camp Humor

BY WILLIAM W. BARTLETT

THERE are various types of American humor, and nearly every profession or occupation has its own peculiar stock of jokes and witticisms, in which, as a general rule, exaggeration is a decided feature.

The creed of the typical woodsman is, perhaps, well expressed by a remark the writer chanced to hear when on a visit some years ago to a logging camp. It was in a teamster's shanty. One of the lumberjacks had been expressing himself rather forcibly concerning a piece of harness that was missing, when a big Irishman offered this sage advice: "Till the boss that you laid it on a shtump and somebody shtole it. Above all things niver till the truth."

The temptation is strong to relate some of the wonderful exploits of Paul Bunyan and his big blue ox, "Babe." Instead, the writer will confine himself to some odds and ends of logging camp humor which have been related to him by veterans or as he has himself come across them in his many sojourns in the lumbering regions of northern Wisconsin.

Visiting another camp soon after New Year's, the iced roads were found built up in good shape and some very creditable sized loads were being hauled. Some one made a remark to this effect, when another replied, "But they are no such loads as old Jake used to haul. We had to shoot his dinner up to him with a shotgun."

In every logging camp crew, in addition to the seasoned veteran, there are always those in camp for the first time. In early days more than at present it was a stock joke for one of these new recruits to be sent from the chop-pings, or "works," as they are now called, back to the blacksmith at camp for a "cross-haul" or a "round turn." A "cross-haul" is the short track, usually at right angles to the logging road, made by the team attached to a chain used in rolling logs up onto the logging sled, or onto a "deck" of logs. The "round turn" is the circular track where the team and sleds turn around at the end of a trip. It will thus be seen that either order would be hard to fill.

The new recruits in camp were told to look out for the "snow snake," perfectly white, with pink eyes, and very dangerous. Above all, they were warned to beware of the "hodag," a fearful animal, compared to which all other wild beasts were but as cooing doves. The writer once heard an old woodsman tell of hiring an Indian to go out in the woods near camp and make blood-curdling noises. The tenderfoot was told that this was a "hodag" roaming in his native wilds.

THE HOAX OF THE HODAG

The fame of the "hodag" will always be inseparably connected with the name of Mr. E. A. Shepard, who died recently at Rhineland, Wisconsin. Mr. Shepard was a retired woodsman, a real character, and ever and always a practical joker. Some years ago, with much ingenuity and labor and at considerable expense, Mr. Shepard fitted up what was his conception of a "hodag." When completed it was taken out into the woods, where the surroundings were appropriate, and photographed. Mr. Shepard then put forth the claim that he had "captured" the animal, and went into minute details of the fearful struggle necessary before this was accomplished. The work was so skilfully done and the "capture" so well advertised that very many accepted it as a fact instead of a hoax.

Another beast of the early lumber woods was the "side hill gouger," a curious but not especially dangerous animal. On account of always living on a side hill, it was said to have two long legs on one side and two short legs on the other. As it could not turn around on the side hill, according to Mr. Shepard, the animal, after coming out of its hole to feed on wild potatoes, was obliged to walk clear around the hill to get back into its den.

A veteran woodsman told the writer some years ago of a practical joke or initiation which in early days it was customary to perpetrate on new recruits in camp. Saturday evening was when the boys went in for a good time. After other games, such as "hot back" and "shuffle the brogue," had been played, the newcomer would be asked if he had ever played "Buy my sheep," and if not the game

would be started. One of the crew, representing the "buyer," and another the "seller," would each take hold of an arm of the new arrival, who was the "sheep." All three were blindfolded. Then would follow a jangling argument between the "buyer" and the "seller" as to the weight, quality, and value of the "sheep." After a little time the bandages would be slipped from the eyes of the "buyer" and "seller," leaving only the "sheep" blindfolded. Finally to "heft" the sheep, the tenderfoot would be lifted clear

from the floor. Just at that moment the cook or some member of the crew would quietly set a large dishpan of water under the victim. The "buyer" and "seller" would both let go his arms at the same time, and the sheep was then considered duly "sold" and the game was ended.

THE CAMP WITH MUZZLE-LOADING BUNKS

Once when visiting a large set of old log-camp buildings the writer noted that in one of the men's shanties, or bunk-houses, the bunks, instead of being built lengthwise the wall, the men getting in over the sideboard, were built head to the wall, the occupants crawling in over the foot-board. On the writer remarking to the camp foreman that this was a new arrangement to him, that individual replied, "Those bunks are what we call 'muzzle-loaders.'"

No better doughnuts can be found anywhere than in the average logging camp; but this fact does not prevent them from sometimes

being designated as "cold-shuts." As a "cold-shut" is an emergency link used in mending a chain, the term is not overcomplimentary.

Copenhagen snuff is a much-used commodity in logging camps, but the substitute appellation, "Swedish condition powders," was a new one to the writer when he heard it on his last trip.

The terms "shanty boss" and "bull cook" are both applied to the same individual. The appropriateness of the terms lies in the fact that this personage is neither a "boss" nor a "cook." It is his duty to cut and bring in wood, carry water, get up in the wee small hours and build the fires in camp office and bunk-houses, sweep out



THE JOLLY JIG DANCER AND THE CAMP FIDDLER
"TUNING UP" IN THE CAMP OFFICE, PREPARING TO
BREAK LOOSE AND MAKE THINGS HUM



TYPICAL WINTER SCENE IN A LOGGING CAMP—THE SLEEPING SHANTIES IN THE MEN'S QUARTERS

the bunk-houses occasionally, feed the pigs if there are any, and perform any other odds and ends of work lying around loose as may be necessary to keep himself out of mischief. The nearest he comes to being a "cook" lies in the fact that it is his duty to take the dinner out to the men at the "works." About 10 o'clock in the forenoon the camp cook, with his cookees, or helpers, packs the dinner in the big lunch-box, which is fastened to a sled, or "jumper," hauled usually by one horse. Arrived at the regular dinner place, the "bull cook" starts a fire, puts on a kettle of tea to steep, unpacks the dishes and food, and blows a horn to call the men to dinner. When all have had their fill, the "bull cook" packs up the dishes and any food remaining and returns to camp.

The prune, that ever-present article of diet in a logging camp, has been by some camp humorist termed the "logging berry." A Mr. W. F. Kirk, himself a former woodsman, has published some very clever Norsk

dialect poems. In his latest book, "The Norsk Nightingale," may be found the following gem, which is given here with Mr. Kirk's kind permission:

SONNET ON STEWED PRUNES

Ay ant lak pie-plant pie so wery well;
Ven ay skol eat ice-cream, my yaws du ache;
Ay ant much stuck on dis har yohnnie-cake
Or crackers yust so dry sume peanut shell.
And ven ay eat dried apples, ay skol svell
Until ay tenk my belt skol nearly break;
And dis har breakfast food, ay tenk, ban fake;
Yim Dumps ban boosting it, so it skol sell.
But ay tell yu, ef yu vant someteng fine,
Someteng so sweet lak wery sweetest honey,
With yuice dat taste about lak nice port vine,
Only it ant cost hardly any money,—
Ef yu vant someteng yust lak anyel fude,
Yu try stewed prunes. By yiminy! dey ban gude.



HAULING IN THE WINTER WOODS. A LOAD OF LOGS ON THE LOGGING ROAD NEAR BLACK LAKE, WISCONSIN

The humor of the logging camp is truly cosmopolitan, and is just beginning to receive the attention it deserves.

Forests of the Amazon

BY S. J. RECORD

THE number of vascular plants actually known to occur in the Amazon region is about 10,000. It is believed that this number will be doubled by more thorough exploration, and that there will be found not less than 10,000 woody plants. Three-fourths of these are probably shrubs and vines, leaving the total estimated tree species at 2,500. Very few of these are of present commercial value.

In the Amazon region there is an entire absence of conifers, such as pines, spruces, firs, cedars, etc., which form such a prominent part of the big forests of the United States. Moreover, there are no representatives of the walnut family, birch family, maple family, and oak family in that vast region. In fact, there is not a single tree that

grows in the United States that also grows naturally in northern South America.

The families we are familiar with which are of importance in the Amazon are the locust or pea family, the sassafras family, the catalpa family, the mulberry family, and the orange family. These families play a very small part in the commercial timber supply of the United States.

There is an enormous timber wealth in the Amazon country, but we have drawn upon it solely for a very few woods for special purposes. When it comes to introducing the cheaper kinds as substitutes for the ordinary woods of our market, the lack of familiarity with the foreign material is going to make such introduction into common use very slow and difficult.

The Fitchburg Town Forest

By H. O. Cook

WE OCCASIONALLY find examples of legislation in our American life passed far in advance of the need. Such was the "town forest law" of Massachusetts passed in 1882. The terms "forestry" and "planting of forest trees" must have sounded strange to the legislators of that day. As a result of this premature birth, the existence of this law became practically forgotten until the desirability of town forests began to be discussed about 1911-12, when the act of 1882 was brought to light and it was perfected by the addition of one or two slight amendments in the legislative session of 1913.

The city of Fitchburg, which, by the way, was the first municipality in Massachusetts to employ a technically trained man as a City Forester, was the first town to take advantage of this act. It so happened that the city owned four parcels of land, aggregating 109 acres, which did not seem to serve any particular purpose. They were too far out of town to serve as parks; they were not on the watershed of the city, and so did not interest the water commissioners of the city.

"Why not turn this real estate into a town forest?" some one asked. And, in 1914, it was done. The land was well adapted to the purpose, because the four parcels, which are not contiguous, contained all types of soil, from merchantable pine and hardwood timber to abandoned pastures with the first beginnings of a new forest.

The "Town Forest" was

placed under the jurisdiction of the Park Commissioners, an unpaid board of five members, whose administrative duties are in the hands of a salaried official called the City Forester, Mr. Guy Hubbard. In this connection it is worth while reviewing the duties of this municipal "pooh bah." As City Forester, he has charge of the planting and care of all trees on public streets; he is superintendent of parks, and under this title manages Coggeshall Park, a fine forest park of 210 acres, plus the various commons, squares, playgrounds, and other public grounds of a city of 50,000 inhabitants; he is local moth superintendent, and under this title acts for the State Forester in the work of suppressing the gypsy moth in his city; he is municipal fire-warden and has charge of fighting forest fires in Fitchburg; so that Mr. Hubbard finds no difficulty in keeping comfortably busy.

The management of the town forest has been comparatively simple. The large-spreading pines have been removed and the old pasture land and fields have been planted with white and Scotch pines. The school children of the town participate in the planting and care of the

Forest, which has served not only as a valuable demonstration to them, but as a real incentive in interesting them in forests. They feel that the forest belongs to them, as it really does. Some 50,000 trees furnished by the State Forester have been used for planting. Some gray birches, which were suppressing planted and natural pine reproduction, have been cut out. The



YOUNG AMERICA SETS OUT LITTLE TREES

Some snapshots of the young people of Fitchburg, who participate enthusiastically in the planting work and general development of their town forest.

idea has been to maintain this town forest as a commercial institution, and all work done on it has been of a purely silvicultural nature. Nothing has been done for esthetic purposes or to improve the land for recreational use.



A VISIT OF EDUCATIONAL DEMONSTRATION TO THE SIX-YEAR-OLD PLANTATION

It is not to be supposed that all the forestry work done in Fitchburg has been expended on the "town forest." Mention has already been made of Coggeshall Park. Unfortunately, about half of the original forest growth in this park was chestnut and, owing to the ravages of the blight, it has been necessary to cut out the chestnut woodland little by little, until the last trees were cut last winter, when 20,000 feet of lumber and 300 cords of wood were cut. The cordwood sold for \$8.50 per cord on the lot, thus producing quite a little net income for the park. This cut-over land has been reforested with pines as fast as the chestnuts have been removed and 100,000 pines have been planted.

The city of Fitchburg is fortunate in owning some 1,000 acres of land on the watershed of the streams and ponds from which it draws its water supply, and the Water Commissioners have put much thought and labor into improving the forest on this land. Woodland containing poor hardwoods and chestnuts has been thinned out and the growth replaced by planted conifers, and all old pastures and abandoned fields have been reforested. The Water Commissioners have set out about 100,000 trees, all coming from the state nurseries.

One of the best features of the forestry work in Fitchburg is the fact that it represents a steady effort, carried on for the past ten years, and is not the result of some spasmodic agitation fomented by the city government or



THE CITY FORESTER DEMONSTRATES FOREST PLANTING ON FITCHBURG'S MUNICIPAL FOREST

a local organization and forgotten in a year. Carried on in this way, it has represented but a small drain on the city treasury, and at the same time means the building up of a fine asset for the city.

Protecting New Hampshire Forests

By G. H. COLLINGWOOD

ABOUT one hundred and twenty-five people attended the Annual Forestry Conference of the Society for Protection of New Hampshire Forests, at Plymouth, N. H., during September 5, 6, and 7. All who were there felt deeply indebted to Dr. E. L. Silver, director of the Plymouth Normal School, because of the facilities of the school which were so cordially turned over for their entertainment and convenience.

Philip W. Ayres, the Forester for the Society, performed the remarkable feat of conducting a rather heavy program with sufficient variety so that no portion of it became boring. The subjects discussed were divided into four groups, Insect Attacks and Fungous Diseases, Forestry and the Farm, Forest Reservations, and Parks and Trails.

Under Forestry and the Farm there was a particularly interesting discussion in which the county agricultural agents and the agents in charge of white pine blister rust control took an active part. The general opinion as expressed by all those who spoke was that the farm forest conditions of New Hampshire are now ripe and waiting for the extension activities of a forestry specialist.

On the first day of the meeting there was an excursion over the Camp Moulis trail to the top of Cardigan Mountain, and on the final day a group made the trip to the Greeley Ponds. The Society for the Protection of New Hampshire Forests is making an effort to have these included in the White Mountain National Forest, whose boundaries now extend within a short distance of them.

The Destruction of Waterfowl in the West

BY ALLAN BROOKS

A FEW years ago several gentlemen of proved experience were sent from the United States to Canada to investigate the conditions on the great breeding grounds of ducks in Manitoba and Saskatchewan. Their mission was to see how the Canadian Government was doing her part in conserving these breeding grounds, so as to insure a perpetuation of ducks for future generations of sportsmen. Their report was entirely favorable; ample breeding grounds were found to exist, vast marshes still undrained, and a general respect for the protecting game laws observed.

Canada is doing her share.

Nine-tenths of the total duck and goose population of North America are reared within her territories, but practically the whole of this tremendous aggregation of waterfowl has to retire far to the south of her boundaries each winter.

With all the present-day attention to the protection of our bird life by both sportsmen and nature-lovers—who may or may not believe in the killing of birds for sport—little attention seems to be paid to this so-called “duck sickness” of western America, which is one of the most serious menaces to bird life that exists today, a menace that is increasing both in area and in the number of species affected with each passing year.



HOW THE SO-CALLED “DUCK MALADY” IS DEPLETING THE RANKS OF OUR WILD FOWL. THIS PHOTOGRAPH, TAKEN AT THE MOUTH OF WEBER RIVER, UTAH, SHOWS DEAD DUCKS STREWN ALONG THE SHORE OF THE RIVER



WHEN A HUNTER AT NORMAN, CALIFORNIA, HAD SHOT HIS DAY'S LIMIT OF TWENTY-FIVE DUCKS, HE PROMPTLY DISCARDED THEM WHEN HE FOUND BIRDS WITH DUCK SICKNESS ABOUT THE SLOUGHS

What of the winter homes for this host? In the east, and especially in the southeast, there is ample accommodation for the migrant fowl, but in the west the hopelessly short-sighted policy of draining every shallow body of water has reduced the waterfowl refuges to a pitiful fraction of their former extent. In many localities disease, induced by the lowering or drying up of the water, has transformed these refuges into veritable death-traps of the most terrible nature, where the toll taken by disease is far in excess of the total killed by all the sportsmen of the regions affected.

In the excellent reports on this disease by Dr. Alex Wetmore, of the United States Biological Survey, and by Mr. Frank C. Clarke, special assistant to the California Fish and Game Commission, the symptoms of the disease are fully described and its cause is traced to an alkaline condition of the feeding and resting grounds of the birds. This condition is mainly due to the lowering of the water-level, caused by the drainage and reclamation of the waterfowl resorts, and also to the cutting off of the water at its source in the mountains for irrigation purposes. The consequence is the drying up of the lakes in the valleys, permitting the alkaline poisons to be leached out of the drying mud. This alkaline poison is subsequently assimilated by the ducks, or other waterfowl, with their food or when drinking, usually when these areas are covered with shallow water, after the fall rains.

This reclamation of our shallow lakes and marshes is going on at an alarming rate over the whole of western America, more especially so in the semi-arid regions.

DRAINAGE THREATENS WATERFOWL LIFE IN WESTERN STATES.

If it continues at its present rate, it will in a few decades seriously threaten the very existence of most of our inland waterfowl in the West, for the disease is spreading. Originally known only from the Great Salt Lake region, in Utah, and the lower San Joaquin Valley, in California, in both of which it has been of fairly regular occurrence each year for the past twenty years, it has now been reported from many localities; from Salton Sea, in extreme southern California, north to Lake Bowdoin, in Montana, and east to Kansas. Last year the first epidemic occurred in Canada. The ducks of Lake Jackson, in Saskatchewan, were reported to be dying in thousands and were washed ashore in windrows, most probably from this same disease.

The alkaline cause is puzzling and does not seem to agree with the obvious spread of the disease. Most of us have had experience of ducks frequenting and in many cases spending their entire time on lakes heavily charged with alkali, and being none the worse for it. It may be that, while alkali is the prime agent, the poisonous quality is the result of some chemical reaction caused by the foul-



Upper—A BEAUTIFUL PINTAIL, PHOTOGRAPHED AT NORMAN, CALIFORNIA, WHERE IT WAS FOUND HELPLESS FROM THE DUCK SICKNESS

Middle—AN AFFLICTED GREEN-WINGED TEAL, ALSO PHOTOGRAPHED AT NORMAN. IT IS STUCK IN THE MUD AND TOO WEAK TO RELEASE ITSELF

Lower—THIS MALLARD APPEARED TO BE IN THE LAST STAGES OF DEATH, BUT RECOVERED UNDER TREATMENT. PHOTOGRAPH TAKEN AT MOUTH OF BEAR RIVER, UTAH

ing of the water, due to the congestion of fowl in formerly well-flooded areas. This might possibly account for the undoubted spread of the disease to other birds besides ducks. In both Wetmore's and Clarke's reports shore birds were noted as suffering only to a slight extent, and land birds hardly at all. This year (1923), at Buena Vista Lake, shore birds were the worst sufferers and land birds were becoming seriously affected.

An account of the writer's observations at this locality is given here. Buena Vista Lake is a very shallow body of fresh water lying at the south end of the San Joaquin-Sacramento Valley, the great interior valley of California. This valley is by far the most important wintering ground for ducks and geese lying west of the Rocky Mountains. Up to comparatively recent years the southern portion of this valley, largely a desert, had four large lakes—Tulare, Goose, Goleta, and Buena Vista—and of these the first named was by far the largest and supported immense numbers of waterfowl. Now, alas! the first-named three are entirely drained and there only exists Buena Vista Lake, which itself has been entirely dry more than once.

The writer arrived at this lake on April 24 last, in company with Mr. A. J. van Rossem, who had spent a large portion of the preceding year at this lake, and had also visited it frequently in former years, while

studying the birds of the region. We remained at the lake for about a month. At the time of our stay the lake was about eight miles in diameter, with a shore-line of about thirty miles, and probably not more than seven feet deep anywhere. The water for a long distance out from the shore was very shallow and blown about by the high winds. Areas that were dry one day were covered with a few inches of water the next, owing to change of wind. The water itself did not seem to be especially alkaline, nor very foul, in spite of the presence of numbers of dead carp and a far greater quantity of dead waterfowl.

SHORE-LINES STREWN WITH DEAD DUCKS

The season was too late for many ducks; the majority had already gone north; but the shore-line was strewn with dead ducks in various stages of decomposition, and mixed with these were large numbers of dying ducks. Shovelers, pintail, and green-winged teal were the principal species represented, and each day fresh birds came ashore to die. Six other species of ducks were represented among the dead and dying ducks. There were no geese, as this is not a goose lake.

Shore birds were in thousands and they were at this time the principal sufferers; sixteen species were seen in a dead or dying condition. The fatality among some species was terrific. Of avocets and black-necked stilts,

all the resident stock were killed; each day fresh flocks of these came in, and within twenty-four hours at least 25 per cent of these would be ashore in a paralyzed condition. If the flocks remained, they would all sooner or later become affected. Most of these flocks consisted of mated birds, and it was a common sight to see one of the pair feebly fanning its wings, as it squatted or struggled in the liquid mud or shallow water, while its mate stood or hovered over it, uttering plaintive cries.

The smaller sandpipers were the heaviest sufferers, and of these the western sandpiper, because of its enormous numbers, contributed the greatest toll. They were lying along the shore and for forty yards inland in countless numbers, while in the shallow water fresh bevvies of the poor little mites struggled to the shore to die. In many places there were ten sick or newly dead western sandpipers to each yard of shore-line. Very frequently the dead birds were in pairs or threes, touching each other, the head drawn in and the little bodies hunched up, as if asleep.

THIRTY-EIGHT SPECIES OF BIRDS DEAD OR DYING

Allowing only one bird each week for every yard of shore-line, this would give 160,000 birds killed, for this species alone, during the three weeks of our stay; and this is an extremely moderate estimate. In all, thirty-



THIS BEAUTIFUL PHOTOGRAPH, USED THROUGH THE COURTESY OF DR. BARTON EVERMANN, REPRESENTS A PORTION OF THE BREEDING GROUNDS OF THE WATER BIRDS WHICH RESORT TO THE SAN JOAQUIN VALLEY TO REAR THEIR YOUNG. MANY THOUSAND BIRDS—DUCK, AVOCETS, IBISES, TERNS, BLACK-NECKED STILTS, BITTERNS, BLACKBIRDS, AND SEVERAL OTHER SPECIES—COME TO THIS REGION. THE EXHIBIT WAS PRESENTED TO THE CALIFORNIA ACADEMY OF SCIENCES BY HON. JOSEPH D. GRANT

eight species of birds were identified as dead or dying of the disease. Of these, several species were land birds—blackbirds (two species), song sparrows, pipits, etc. Of water birds, the only species that seemed to be immune were two species of tern—Caspian and Forster's. Herons, egrets, ibises, coots, gallinules, gulls, grebes, pelicans, and cormorants, all lay dead or dying, the characteristic hunched-up attitude, with the feathers of the back standing up, proving the cause of death in nearly all cases.

There seemed to be no evidence of recovery in any case, once the bird was down. Paralysis of the legs usually prevented any locomotion, and the poor creatures died in the blazing sun, unable even to get a drink of water when it was only a foot or two away—and to drink the water was sure death. Many sheep were seen in a dying condition with every symptom of the disease; a herd of several hundred seemed to lose about three per day until the owners removed the herd from the neighborhood of the lake.

Mr. van Rossem said that the devastation by this disease was worse than it had been the previous years, especially so among the shore birds. Several old-timers, duck-hunters who had lived at the lake for twenty years—said the same, although they did not remember a single year in the last twenty where the destruction of ducks by this disease had not been more or less in the nature of a calamity.

A VALLEY OF DEATH-TRAPS

The tragedy was accentuated by the apparently ideal feeding conditions. Flocks of migrant waders could be seen coming in from high in the air. Here was a huge sheet of shallow water, the first to meet their eyes after their long flight; the shores were covered with fowl, and no hunters disturbed the peace. The death-trap was all set. Down they would come, and if their stay was for more than twenty-four hours, the majority would never leave at all. And similar death-traps exist all along this valley, as the birds travel northward.

When on a visit in February to Glenn County, some three hundred miles north, the evidence of the devastation of the preceding year was very apparent. The mummied remains of ducks in the characteristic huddled-up position were everywhere around a large alkaline pond on which was a tremendous concentration of wild fowl. The first victim for 1923 was picked up just before we left, a

fine pintail drake, fat, and in perfect condition to look at. Other near-by ponds equally alkaline, but without the same concentration of fowl, showed no evidence of disease for this or the preceding year.

Now, the obvious remedy, as pointed out by both Wetmore and Clarke, is fresh water that is free from alkali. Given this, even birds in the last stages usually recover. The difficulty is to divert the water from the present irrigation systems into its original storage basins. Even where gun clubs offer to pipe this in at their own expense, the strongest objections are raised: first, that the water will be better employed for agricultural purposes, and, second, that this is a ruse to attract greater numbers of ducks to these private shooting grounds.

OTHER POSSIBLE REMEDIES

A proper system of public shooting grounds and game refuges, governmentally controlled and properly regulated, will undoubtedly be a great help, and every effort should be made by all bird-lovers to



THESE SNOWY HERON, WHICH HAD SILENTLY SUCCUMBED TO THE "DUCK SICKNESS," WERE FOUND BY THE CAMERA IN THE MARSHES OF BEAR RIVER, UTAH

further this project. Another remedy, which may have to be used as a last resource, is to adjust the open season so as to allow shooting on these lakes that are known to be affected by disease, after the normal shooting season has closed, say during February and possibly the greater part of March, before any species of ducks have commenced nesting operations. The effect would be to drive the birds, not only ducks, but also the shore birds, which are extremely responsive to the reports of guns, to more healthful waters.

The disease seems to disappear automatically soon after the opening of each shooting season. At the commencement, there are hundreds of dead ducks, fat and in good (apparent) condition. Quantities of these are picked up and eaten with no ill effects. After a few weeks of shooting, the ducks no longer seem to be affected. It may be this is due to the commencement of the fall rains; again, it may be that the ducks can no longer guzzle in the infected shallows inshore, heavy shooting compelling them to remain out in the purer water, far out of gunshot, and to feed by night in the alfalfa and grain fields. But in a few weeks after the close of the open season the ducks return to the feeding grounds in the shallow water along the shores and the disease once more becomes rife.

Investigation may prove that the more recent virulence of the disease is coincident with the shortening of the open season to three and a half months. One thing is certain:

[Continued on page 640]

Kit Carson's Calling Card

By WILL C. BARNES

SEVERAL years ago a number of people, en route to the wonderful snake-dance ceremony of the Hopi Indians, in northern Arizona, camped one night at a desert water-hole in the canyon a few miles below the present Keams Canyon Indian School, where, along in 1876, Tom Keams, ex-soldier, pioneer, and all-round good fellow, established an Indian trading post in what was then about the farthest from civilization any one could possibly get.

That night a Navajo boy, herding sheep on the "mesa" above, came to the water-hole for a supply of water for his sheep camp. While he was filling two ten-gallon kegs slung on the "saw-buck" pack-saddle cinched to a diminutive burro, one of the party questioned him as to the road ahead, the grass for their horses, the exact date for the snake ceremony—always an uncertainty—and also asked him if he knew of any cliff-dwellers' ruins or hieroglyphics they could look over on their way to the Hopi village. One of the party was "bugs" on old ruins of cliff-dwellings and the mysterious and so-far-undecipherable markings on the walls of many of the deep canyons in the Southwest, called "hieroglyphics" by the uncultivated and "pictographs" by the scientists.

The boy, with a combination of Spanish, Indian, and English, ably filled out with a plenteous supply of signs, answered their questions as best he could, and what the interrogators didn't understand they guessed at, just as the majority of explorers in strange lands have ever interpreted the information imparted to them by the natives. When it came to the matter of pictographs the questioner took a piece of sharp rock and scratched a few crude figures upon the near-by canyon wall. "You sabby?" he asked. The boy's face lit up. "Si, si," he exclaimed eagerly, pointing down the canyon as if to indicate the location of the place where the cryptic writings could be viewed.

Before the boy left with his burro-load of water, he had agreed to guide the party to the place where the pictographs were to be found, which he explained was "No mucho lejos"—not very far. Early next morning the boy rode into camp, and the men of the party were soon mounted and following him down the canyon. Arrived at a rather wide opening in the canyon, the boy reined in his pony and pointed toward the sky-line of the canyon's crest. The walls here were from a thousand to fifteen hundred feet high, but not perpendicular, being formed by a number of ledges of varying thickness, each with a sloping mass of talus at its foot, the result being a series

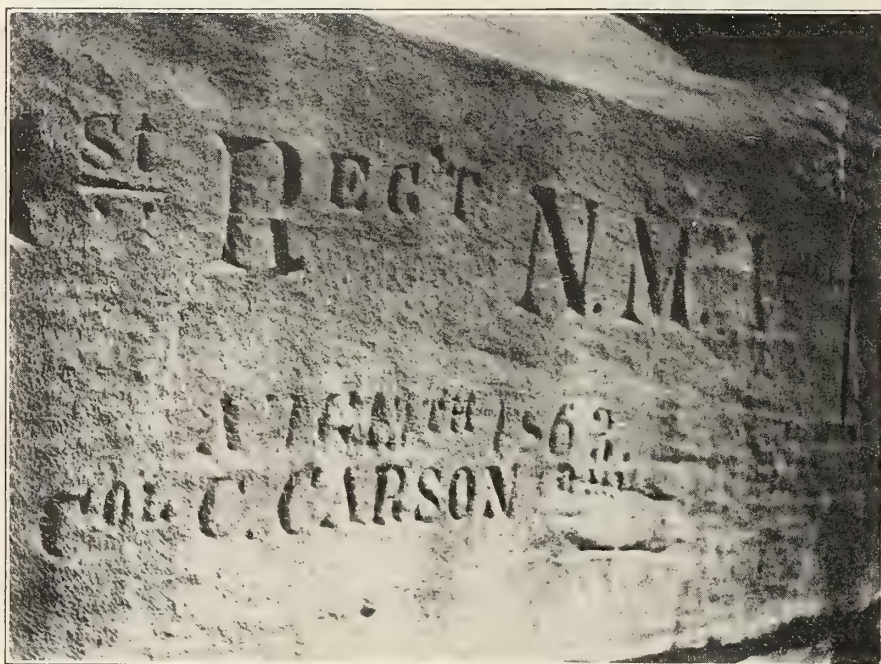
of terraces until at the top the canyon was probably ten times as wide as at the bottom.

The boy indicated that the hieroglyphics he would show them were at the very top of the canyon, and promptly pointed his pony up the first slope, which was not only exceedingly steep, but also a mass of sharp, broken rocks, "just like riding over a pile of broken beer bottles," one of the party declared.

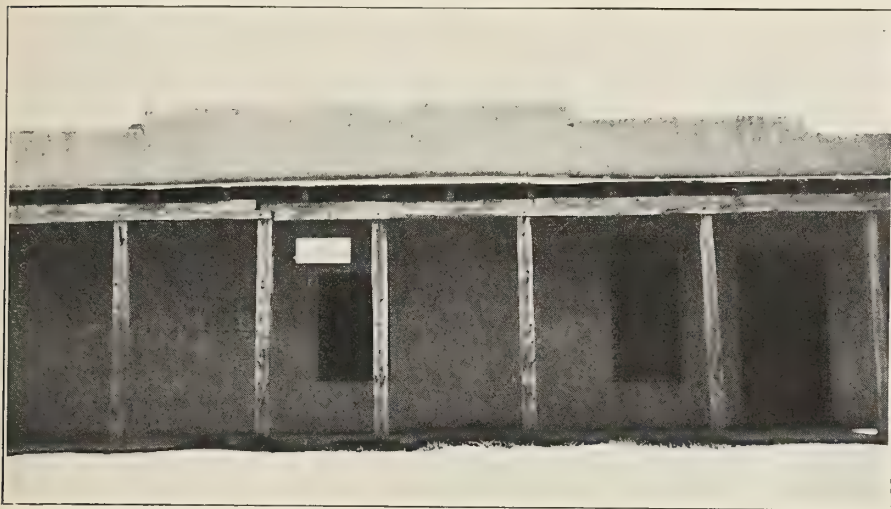
The diminutive Navajo pony, with-

out a shoe to a single foot, plunged through the rocks, often flinching from the sharp points, but forging straight ahead under the constant lash of the rawhide "quirt" in the boy's right hand, plus a very devil's tattoo played on his none-too-well covered ribs by both heels of the rider. We followed, but our horses, though grain-fed and well shod, made mighty poor work of the climb.

Soon the kid picked up a trail which zigzagged up the side of the canyon, finding here and there narrow openings or passes in the bold cliffs, where from the bottom nothing but a solid wall of stone seemed to exist, until we reached the last terrace, with a last wall above us possibly twenty feet high. The trail here led along the edge of the talus, with the ledge of the cliff below yawning under our stirrups until it turned up through a narrow cleft to the "mesa" above. Just before we reached this turn, the



THE CARD KIT CARSON LEFT, CARVED DEEPLY IN THE FACE OF THE ROCK ON THE TRAIL HE BLAZED IN PURSUIT OF REBELLIOUS NAVAJO INDIANS UNDER WAR DEPARTMENT ORDERS IN 1863



THE HOUSE AT TAOS, NEW MEXICO, IN WHICH CARSON LIVED IN RETIREMENT FOR MANY YEARS FOLLOWING HIS THRILLING, ADVENTUROUS LIFE ON THE FRONTIER IN THE SERVICE OF HIS COUNTRY

boy slipped from his pony and we followed him to the foot of the ledge, where he pointed triumphantly to some carvings on the face of a smooth sandstone, which were pictographs all right, but neither prehistoric nor Indian. Carved deeply into the rock, which was protected from the weather by an overhanging shelf, we read, easily:

"1st Regt. N. M. Vols.
Aug. 17th, 1863
Col. C. Carson Comdg."

"Old Kit's calling card, by all that's holy," gasped the historian of the party, who quickly sensed the meaning of the words. "I'll bet he came down this very trail with his whole regiment. What luck!" His face fairly beamed with the joy of discovery.

A little delving into the history of Carson's expedition at the head of the New Mexico volunteers to punish the Navajo Indians for their numberless raids on the settlements along the Rio Grande to the east proved him to have been in that immediate vicinity on that very date. Carson marched into the Navajo country at the head of this regiment in obedience to the following orders, which are copied from the records of the War Department, U. S. Army:

"GENERAL ORDERS, No. 15

"HEADQUARTERS, DEPT. N. M.,

"SANTA FE, N. M.,

"June 15th, 1863.

"For a long time past, the Navajo Indians have murdered and robbed the people of New Mexico. Last winter, when eighteen of their chiefs came to Santa Fe to have a talk, they were warned and told to inform their people that for these murders and robberies the tribe must be punished unless some binding guarantees should be given that in future these outrages should cease. No such guarantees have yet been given, but, on the contrary, additional murders and additional robberies have been perpetrated upon the per-

sons and properties of our unoffending citizens.

"It is therefore ordered that Col. Christopher Carson, with a proper military force, proceed without delay to a point in the Navajo country known as Pueblo Colorado, and there establish a defensible depot for his supplies and hospital, and thence to prosecute a vigorous war upon the men of this tribe until it is considered at these headquarters they have been effectively punished for their long-continued atrocities.

"By command of Brigadier General Carleton:

"(Signed) BENJAMIN C. CUTLER,

"Assistant Adjutant General."

Additional orders instructed Carson to name the new post after General Canby, who had recently relinquished command of the Department of New

Mexico. This was the same General Canby who but a few short years later met his death at the hands of the Modoc Indians in the famous Lava beds of northern California.

Carson's orders further turned over to him twelve companies of the 1st New Mexico Volunteer Regiment, of which Companies D, G, K, and M were mounted. It is interesting to note that, beside himself, Carson had but three other commissioned officers to handle 333 enlisted men, who composed the regiment at that time.

Carson sent back official reports of his progress at frequent intervals written in diary form. The one that verifies and practically authenticates the carving we had discovered reads as follows:

"At 8 a. m. on the 23rd (August), 1863, arrived at the west opening of the Canyon de Chelly, but could find no water. About twelve miles further found abundance of running water and good grass and encamped."

These reports are dated Fort Canby, N. M., August 31,



WHERE KIT CARSON QUIETLY RESTS, AT TAOS, THE TOWN OF HIS ADOPTION. THE HEADSTONE AND FENCE WERE PLACED THERE BY THE MASONIC GRAND LODGE OF NEW MEXICO IN 1868. CARSON WAS A MASTER MASON

1863. From all the evidence obtainable, Fort Canby must have been located on the Pueblo Colorado "Wash," a few miles east of where we were and just over the line into what is now Arizona, that state not having been separated from the mother State of New Mexico until December, 1863. The Canyon de Chelly lies to the northeast from the stone record, and the reports indicate Carson had scouted to the westward from Fort Canby into the vicinity of Keams Canyon, where he left his record on the stone walls, and then turned to the northeast, toward Canyon de Chelly, where he found plenty of Navajos hidden away in its mighty deeps.

Methods of warfare in those days were quite as efficient (?) as in later years, for Carson reports that, in order to starve the Indians into submission, he cut down more than three thousand growing peach trees in one canyon alone, his men having orders to destroy the peach orchards wherever found. Besides this destruction, Carson estimated that his command killed over 50,000 sheep and goats belonging to the Navajos.

It is rather interesting to note that the Hopi Indians, who then lived to the westward of the Navajos, have today many peach orchards, and in all probability the trees destroyed by Carson and his men belonged entirely to these Pueblo Indians, the most inoffensive, kindly disposed people in all the West, for the Navajos at that time could scarcely have had any permanent agricultural settlements, while the Hopi have for centuries raised many peaches

in their orchards, set among the sand hills, where none but they could ever hope to make them grow. Unfortunately, however, "All Indians looked alike" to Carson and his bunch of rough riders.

A wait for a couple of hours for the sun to move along resulted in securing an excellent photograph of the carving, and the party rode back to camp quite well pleased with their newly found, but somewhat modern, "pictograph."

After years of rough frontier life, filled with thrilling adventures and wanderings through the unknown West of his day, where he fought and subdued not only Indians, but unruly members of his own race, Carson died May 23, 1868, at 59 years of age, peacefully and quietly, in his bed at Fort Lyons, Colo-

rado, one of the early outposts of civilization in that region. It is still a government post, on the north bank of the Arkansas River, a short distance east of La Junta.

For many years he had called the quaint old town of Taos ("Towse"),* New Mexico, his home. Here he had married his wife, and his last request was that his body be taken there for final interment. This was done, and he lies there today, in the little "Campo Santo" of the Mexicans, and by his side the body of his wife. Near by the wonderful six-storied edifice of the Taos Pueblo Indians rises into the clear blue sky like some modern pyramid, while dominating the whole region the mighty peaks of the "Sangre de Christo" Range (The Blood of Christ) form a backbone at once glorious and inspiring.

*To rhyme with Browse.



THE IMPRESSIVE SIX-STORIED EDIFICE WHICH STANDS AS A STATELY MONUMENT TO THE ART AND INDUSTRY OF THE TAOS PUEBLO INDIANS OF THOSE EARLY FRONTIER DAYS

Does Forest Fire Prevention Mean Anything to You?

The Herman Creek fire on the Oregon National Forest in July and August, 1922, burned over 11,000 acres of timberland in the Columbia Gorge, destroyed \$34,000 worth of timber, and cost more than \$40,000 for fire-fighting labor and equipment.

This forest fire was started by a careless rancher, and because of the hazy condition of the atmosphere, due to smoke from other fires just as carelessly started, burned for a day before it was discovered. The rancher was as little interested in reporting the fire as he had been in starting it.

Because of the headway the fire gained and the difficult topography where it spread, nearly a month was used up in putting it under control. For some time it threatened to enter the Bull Run watershed and do serious damage to Portland's water supply.

The careless camper spent 90 days in Multnomah County jail and now is free again. The fire scar in the gorge will remain for many years—a monument to his carelessness.

The Fun of Cutting Cord-Wood

*By Members of the Appalachian Mountain Club, Who Have Found It
an Instructive, Health-giving Sport*

IN its November, 1922, issue, AMERICAN FORESTRY published an article on "Tree Felling as a Sport," by Dr. W. Gilman Thompson. This paper went straight to the hearts of a little group of men here in Boston, who have practiced the Gilman precepts for the past five winters.

The winter of 1918, the darkest winter of the war, who will ever forget it? In New England we shivered with

cord-wood. "Cut-a-Cord" clubs were organized in many communities and among them one by the Appalachian Mountain Club of Boston, Massachusetts, the work being started on the estate of Mr. Storrow, in Lincoln, Massachusetts.

With a further incentive to help out the club's contribution toward aiding the families of the Italian guides who gave so much of themselves in the great war, we acquired the stumpage on a large maple swamp area in Brookline, a suburb of Boston.

All callings were represented. Young and old, men and women, responded heartily—school teachers, technical men, business men, lawyers, doctors, and just men and women comprised our gatherings, in all conditions of wind and weather. Some days from thirty to forty would be on the ground making the chips fly and keeping the cross-cut saws going, getting up an appetite for our camp-fire lunch on the sunny side of piles of cord-wood.

Over seventy-five cords of wood were accumulated and teamed out onto higher ground, the toppings and brush being burned. In this way several hundred dollars were received, to be added to our contribution for war relief.

The sport was enjoyed so much by the club members that it has been continued and still is a drawing attraction to the more active.

During the past five years this work, or sport, has been carried on principally on an estate located in Dover, Massachusetts, some fifteen miles from Boston. This



THE SHELTER BUILT ON THE CUT-OVER AREA

A retreat, used by the members of the Appalachian Mountain Club as a refuge in stormy weather and also as a luncheon place for trampers.

cold as well as with misgivings. An industrial community, working feverishly in the production of war material, every factory was running day and night.

Located far from the mines that produced the coal, which was our sole dependence for fuel, every ton that could be spared from our cellars had to go to the factories. Our Fuel Commission, headed by Mr. James J. Storrow, instructed every household to economize to the utmost, and finally, as a further measure of economy, it was decreed that office buildings and stores should be unheated on Mondays.

Among many minor measures for coal conservation, Mr. Storrow suggested that the "heatless Mondays" be spent by those whose occupation was curtailed in cutting



INSIDE THE SHELTER

This cozy corner indicates the comfort enjoyed by members of the club in the little place at Dover. The cook-stove, table, and lockers are located in another part of the building.



DOING IT UP PROPERLY

This is a general view showing how the members of the Appalachian Mountain Club cleaned up the cut-over area, burning, in the most approved fashion, all toppings and waste.



ON THE WOODLOT AT DOVER

Three members of the Appalachian Mountain Club cording up a fallen pine tree. This sport, initiated during the war by the fuel shortage, was enjoyed so much by the club members that it has been continued and still is a decided drawing attraction.

estate comprises about one hundred acres of typical New England country landscape. Part of the area had previously been cleared, and another part showed the result of a serious woods fire, including a much larger area adjoining, some fifteen years previous.

Hills, meadows, swampy areas, woodland, and open pasture abound, with a merry rippling brook winding its way through the area and numerous wood roads and paths, by which all of the many interesting points can be reached.

Oaks, pines, birch, maple, shellbark, and chestnut of sizes up to fifteen and a few twenty inches diameter are scattered among the smaller growth, which includes gray birch and alders, with much underbrush.

The active work of wood-cutting has covered the periods from October to May of each year. The trees are felled, cut to four-foot lengths, split, and piled in regulation cord piles, the pine, chestnut, and gray birch being kept separate from the remainder. Red oak, maple, black birch, shellbark, and pines are left, if in healthy condition, and all the underbrush is cleared, which with the toppings are piled and burned whenever the weather conditions are favorable.

The committee having general charge of the work has given special attention to the proper height of stumps, the preserving of all desirable trees for future growth, and the removal and burning with the brushwood of all decaying logs and other wood not suitable for cording.

The work as a whole has been carried on with the purpose in mind of seeing what can be done in the way of cutting and clearing with provision for future development along the same general lines, and the result has been very satisfactory.

to the owner as well as those having the work in charge. An interesting growth of pine seedlings has developed on several sections of the area cleared.

A local sleet storm of a year ago did much serious damage to both ornamental and forest trees on quite an extended area surrounding Boston, not only areas of woodland, but along highways and on many private estates where the trees were a large part of the artistic surroundings. The storm caused damage on the estate where we are located, and much of last winter's work included making a start on the removal of trees wholly or partly destroyed. We have had numerous requests from other owners of wooded areas to undertake the removal of broken-down and injured trees for them, but unfortunately we were not in a position to undertake such work on any basis that would give a reasonable return for the work involved. For this reason many large areas of woodland will be seriously injured for many years to come as the result of a storm which would have done little or no damage if the temperature during the two-day period had been a very few degrees warmer and without wind.

In addition to the health-giving exercise and enjoyment to all members that have participated, the club has received a fixed price per cord for all wood neatly piled where it would be accessible for teaming away; also in some instances a price per acre was paid for clearing, piling, and burning large areas almost exclusively underbrush. All proceeds, after payment of any upkeep expenses, have been used toward financing the trail work carried on by the club, largely in the mountainous sections of the states of New Hampshire and Maine, where the club maintains a number of huts and camps for the benefit and use of the general public as well as its own large membership.

The club has maintained a lean-to or shelter, furnished with a locker for tools, an open fireplace, and an air-tight

stove, with necessary table and benches, so that the workers have good protection for cooking and enjoying their noontime lunches when weather conditions are not favorable for out-of-doors camp-fire lunches.

As quite a complete working equipment has been acquired and the workers have become efficient to a limited extent, they have frequently been called on to clear up small areas in different suburbs of Boston, and also to remove numerous large trees, up to three or four feet in diameter, that needed care in removal and had passed their usefulness or had become dangerous.

As an interesting sport for all lovers of the great out-of-doors and as a health-giving exercise and preserver of health, we can recommend our experience to any others who may be in quest of a sport that will give the best return for the time and money expended.

In addition to the arrangement made for having the wood cutting and clearing done by club members, the owner has given the club the use of his property as a recreation grounds. As the area is largely back land, reached only by wood roads, it is as primeval and isolated as could be desired. Good use is made of the privilege

for nature studies and general enjoyment of out-of-doors life. The latch-string at the shelter being always out, small groups of members drop in at any time for lunch and rest, about one thousand names being entered on the register each year.

Both the wood-cutting and the recreation feature are most popular during the winter months and several regular club walks are taken each year. The allday excursion arranged for New Year's Day is looked forward to with anticipation of a royal good time, and from one hundred to one hundred and fifty members and friends are on hand to eat their noonday lunches around the camp fires in the woods, even with the temperature much below freezing.



HARD AT IT

Finishing work on a hardwood tree over thirty inches in diameter at the butt and about forty feet tall, which was felled and corded up by members of the club.

"THE supply of Alaskan timber can be made perpetual by being placed on a sustained yield basis. . . . With the lesson of forest destruction painfully learned, with the nationwide call for reforestation throughout the states, which will require generations and vast painstaking effort, it has been sought to provide for the utilization of the Alaskan forests and at the same time provide their perpetuation through reproduction. . . . The cutting over of vast areas of forests in the states for pulpwood, wholly without regard to reproduction, and which left the land barren, is familiar to all of us. To prevent that disaster in Alaska, the Government has adopted the program of surveying out forest units to lease for pulp and paper making."—Warren Gamaliel Harding.

In the Wake of the Boll Weevil

By W. R. MATTOON

With Illustrations by the Author

IN SCORES of counties in middle South Carolina and Georgia the humming of sawmills, the chugging of motor trucks of many kinds and sizes hauling sixty-day seasoned lumber over country roads, and the purring of planing mills located up and down the railroads characterize practically the only industry in a region where cotton was formerly king. But the boll weevil advances in 1920 and 1921 in the large and prosperous cotton-growing section of the lower Piedmont region, from the Carolinas to Alabama, changed the picture. It paralyzed farming and in its stead turned the hard-hit farmer to the pine woodlands and developed an extensive timber industry.

"It is timber that kept us from starvation," said an old-timer. "Timber is what's keepin' us together," said a rural storekeeper. "Our business wouldn't a counted fer nothin' if it want fer this lumber proposition," said a general merchant in a county-seat town.

The whole industry, with occasional exceptions, is being run by men green in the business—former farmers and farm laborers, the latter mostly negroes, of course. The great exodus to the North of negroes (mostly men adults) since 1921 has taken north over 50 per cent of the farm hands, and the remainder are mostly in the woods and at the mills where they are contented with \$1.25 to \$1.75 a day in cash, paid every two weeks for 10 to 11½ hours' hard work five or six days in the week.

Unwise cutting and waste are everywhere—high stumps and large tops left in the woods, big slab piles, and careless sawing resulting in huge shaving piles at the planing mills. What's more, between the almost complete lack of knowledge of timber values on the part of the farm

owners—mostly men and women living in town who have tenanted their lands to negroes and have little knowledge of them in detail—and the prevailing high values of pine timber loaded on the cars, the big operators handling 95 per cent of the business are making large "clean-ups" in profits. Or, in the mild words of Judge Purdy of Sumter,

South Carolina, "the vigilant stranger wipes up the sluggish owner."

It used to be this way years ago, and one wonders if somehow it always must be that the farmer—the grower of the timber crop—is to get but a very small fraction of what his marketable commodity is worth, while the shrewd and not infrequently unscrupulous buyer and operator piles up large profits. It is wrong and the injustice of it all should stir the state and Federal forces to effective action. In probably no other line is the farmer so badly beaten out of his rightful income.

High stumps were mentioned as one form of waste. Accompanied by County Agent Drexel, the writer recently measured a random acre in a representative cutting of shortleaf and loblolly pines in McDuffie County, 30 miles west of Augusta, Georgia. Seventy-two trees had been cut, leaving stumps measuring mostly from 12 to 20 inches in diameter inside bark (with a few up to 30

inches) and from 19 to 29 inches in height. The average stump was about 25 inches in height and contained 16 board feet above a height of 12 inches from the ground, or a total volume of 1,152 board feet per acre. The purchaser, thus, had gone away leaving the choicest and most valuable timber to waste—and more than a thousand feet of it per acre, worth to him not less than \$10 a thousand feet!



THE MOST PROFITABLE PINE TO GROW IN THE LOWER PIEDMONT AND COASTAL PLAIN REGIONS IS SLASH PINE. THE PICTURE SHOWS TREES FIVE YEARS OLD AND 9 TO 14 FEET IN HEIGHT



THE TIMBER WASTED IN SUCH HIGH STUMPS WAS "WORTH ENOUGH TO BUY THE LAND SEVERAL TIMES OVER"



FIRE FOLLOWING LOGGING—A MAN-MADE DESTROYER OF THE FOREST



SHORT-LEAF AND LOBLOLLY PINE—THE "COME-BACK" ON OLD FIELDS ABANDONED IN THE '60'S



A VALUABLE FARM PRODUCT—PROBABLY NO OTHER FARM CROP HAS RISEN SO RAPIDLY IN VALUE AS TIMBER



ONE OF THE MANY BEAUTIFUL AND STATELY ANTEBELLUM HOMES IN MIDDLE GEORGIA. MANY OF THESE OWNERS HAVE HAD TO SELL THEIR TIMBER IN ORDER TO MAKE A LIVING



DESERTED NEGRO CABINS BY THE THOUSANDS MAY BE SEEN IN THE WAKE OF THE BOLL WEEVIL

Outrunning A Wounded Grizzly

My Most Exciting Experience as a Forest Ranger

By W. C. McCORMICK

THE Whitefish Mountains of northern Montana are in the Blackfeet National Forest. They were at one time considered the best bear country in the state. Black, brown, and silvertips were killed each year in numbers.

During 1911 I was in charge of a ranger district whose west boundary was the Whitefish Divide. Late that fall, Supervisor McLaughlin, Ranger Pete De Groot and I, in making a short cut from the divide to the Whitefish River trail, started down a steep canyon. When just below timber-line, in some ten inches of new snow, McLaughlin, who was in the lead, stopped his horse and called our attention to a big silvertip sunning himself on the open hillside opposite. De Groot, having the only rifle in the party, got off his horse, took careful aim, and fired. It was a long shot—fully four hundred yards—but at the crack of the rifle the bear let out a “bawl” and began rolling down the hill. After a roll of a hundred feet he gained his footing and lumbered off into the timber, some hundred yards beyond. De Groot shot once more without effect.

Glancing back to the sidehill, I noticed another bear of equal size, just above where the other had been, standing in a bare spot where the snow was gone. Calling to De

Groot, I pointed out the bear. De Groot took careful aim at the broad-side target and fired. As with the first one, this bear rolled a few feet toward us and ran into the timber. De Groot fired a few shots at him, also without effect.

There we were: two wounded silvertips and no hides.

We were not armed for bear, especially of the grizzly variety. Besides De Groot's rifle, I carried the only other firearm, a 32-20 Colt's six-shooter. McLaughlin had no gun. De Groot suggested that I accompany him and follow the tracks in the snow. Wearing only a pair of high-heeled riding boots, without hob-nails, I knew I could not walk along the steep sidehill. McLaughlin, who wore shoes and hob-nails, agreed to accompany Pete if I would let him have my six-shooter, which I did.

I started down the trail, leading the seven head of horses, each of us having a saddle and pack-horse, with one extra Government horse packed with telephones. De Groot told me I would find a cabin and horse feed about a mile down the trail, and to wait there for them.

Within what I considered less than a half mile I found an old trapper's cabin, but no horse feed. Feeling this was not the cabin mentioned by De Groot, I rode on about a mile farther, coming out of the snow into a little park



“SEVEN HORSES STRUNG OUT UP THAT TRAIL, WITH ME HANGING ONTO THE HIND ONE, TAKING STEPS TWENTY FEET LONG”

some hundred yards in width, but containing no cabin. Realizing I had passed the right cabin and feeling the boys would see my horse-tracks when they struck the trail and follow me, I got off my horse and sat down on a log.

On the other side of the "park" there was some tall larch trees about ten inches in diameter on the stump. A happy thought struck me, and I walked over to the first one and attempted to climb it. After several efforts, I decided that if a bear was to take after me that running would be more in my line than climbing a tree.

My horses were standing in the edge of the opening, on the opposite side, half asleep. Leaning against the tree I had failed to climb, I rolled a cigarette. Just as I struck a match to light it, I again glanced at my horses.

They were all looking at the creek a few feet below the trail, with ears erect and every muscle in their bodies quivering. Quite naturally my gaze followed theirs.

That match never got to that cigarette. When it burned my fingers I dropped it. The cigarette fell, unnoticed, from my mouth. I attempted to speak to the horses, but somehow my "Adam's apple" had worked up about three inches too high for speech and stuck there. My knees were beating a tattoo against each other at regular intervals. The small of my back felt like some one had spilled ice water down my collar. I was sure I was frightened.

At the water's edge, on a small gravel bar, just in front of a clump of willows, stood the largest silvertip I ever saw. He was not thirty feet below the trail and between me and my horses. I realized in an instant that to get to my horses I must pass within thirty feet of him. He was standing with his front feet in the edge of the small stream, swinging his head from side to side. Right between his ears the natural color of his head showed a very light gray, but the balance of his head was covered with clotted blood. The blood was dripping from his nose and he was lapping it with his tongue. From the manner in which he would raise his head and sniff toward the horses and me, I concluded he must be blinded by the shot.

Several thousand thoughts entered my head at once. I knew my saddle horse was "loco" over a bear. I also knew he could and would run. All the rest of the horses were tied to each other and to my saddle horse. If he left me he would take the "string" with him. About this time my "Adam's apple" resumed its former position and I made a great effort at whistling a tune. You know—a sort of soothing tune to quiet the nerves of my horse. Did you ever try whistling that sort of tune to the time of a pair of knees that beat an imperfect time? Well, try it.

Somehow the whistling only quieted my nerves. I immediately saw that what I wanted most was to see that bear go back in those willows. A happy thought struck me. A dog usually frightens a bear, and I "barked" just

as much like a dog as I could. Now, right here let me tell everybody, don't *ever* bark like a dog at a wounded silvertip, for *right then* things began to happen.

That first "bark" drew forth the most blood-curdling howl I ever want to hear. I swallowed the next "bark" when only half out. If that bear wasn't mad, he surely made *me* think so. As soon as he let loose that "yowl" I took one long look at my horse, just in time to catch sight of his tail as he whirled *back* up the trail. My next glance was at the bear. He was coming up that little hill at a gait that would make a locomotive ashamed of itself. I thought of the tree at my back, but forgot it immediately. When you think you can't think fast, just have a bear start cutting off your retreat and you'll change

your mind. A thousand things came to me at once. There was one thought that almost floored me; it was a newspaper slogan I had read once in looking over a chart of a murder mystery: "Cross marks spot where body was found." That thought put new life in me. I knew what I wanted, and wanted badly. I wanted to stay with that string of horses.

What time I made across that meadow I never knew. I passed within ten feet of that bear, as he came up the hill. All the shake had left my knees. What I mean is that I was simply *outrunning* that bear. I never looked behind. My thoughts were all for my horses.

As I neared them, I saw they were being "whipped" back into the trail by the horse ahead. I noted there were still two pack-horses headed my way. I almost caught the first one, but missed by a fraction. As the next, and *last*, swung around, I was a substantial part of his pack, for I had a hold on the lash rope that would have taken a crowbar to pry loose. From there on we sure *traveled some*. Seven horses strung out up that trail, with me hanging onto the hind one, taking steps twenty feet long.

There were times when my hold on the rope slacked, proving I was outrunning the pack-horse. At a turn in the trail in my favor, I did an old cavalry stunt I had learned when a boy, and vaulted up behind the pack. On the next straight stretch of trail I looked back for the first time. The bear was about twenty feet behind, running like the wind. Another short turn almost overbalanced me, and thereafter I kept my eyes on the horse's head.

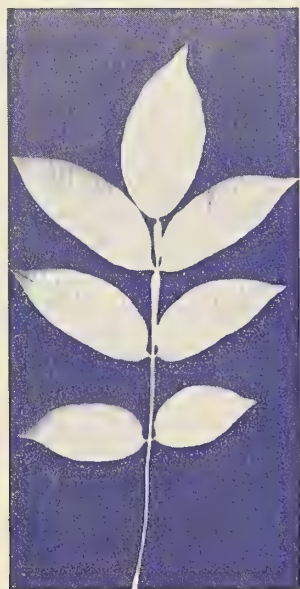
A mile up the trail the horses turned into the old cabin I had passed while coming down, and in their excitement wound themselves around several trees. Immediately I climbed on top of the old cabin and waited. Within a few seconds the bear came loping up the trail. Again my knees began acting wrong. Without as much as a look my way, he ambled on up the trail and out of sight, while the horses, breaking their tie-ropes, plunged into the timber.

It was on top of the cabin that Mac and Pete found me an hour later. We found the horses that evening and camped. What became of the bear? Search me; I wasn't hunting bear.

Winner of the Third Prize in American Forestry's Ranger Story Contest



A feathery frond of the familiar asparagus fern

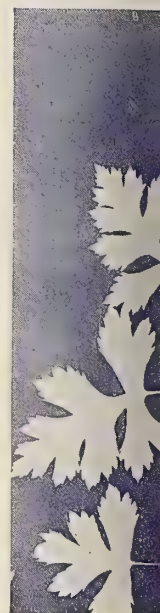


The leaves and winged stem of sumac

TO THOSE who can read it aright, trees tell a lovely story—a story of dainty blossoms, veined leaves, and seeds of varied form. But how to get this story in such a way that all may read and enjoy is the problem. There is the camera, which is expensive and requires skill. There is the rather intricate and tedious method of mounting the specimens. There is the old custom of making impressions on paper smoked over a lamp, which is dangerous for young children without close supervision by grown-ups. And a few are talented enough to be able to sketch the trees. But the simplest, cleanest, and least expensive way to get a record of leaf, blossoms, and seed is to blueprint them.

There is nothing finer than blueprints for nature study in the schools. The making of them fascinates the children, and there is no waste of material, as only one leaf or a tiny spray of blossoms is needed for a print, and dozens of prints may be made from one subject. The fact that the material is so inexpensive places the work in the reach of all. Little children in a few minutes learn to make the prints and revel in the work. There are no dirty hands and no close supervision is necessary, as there is no danger.

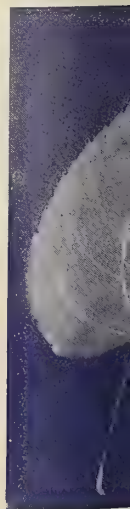
Nothing is needed for the work but a printing-frame, which may be purchased at any kodak shop, and the blueprint paper. The best quality of paper should be used, as the cheaper grades will not show the finer lines in leaf or flower. The study is arranged on the glass, the paper placed over it, the back clamped on, and it is ready to be



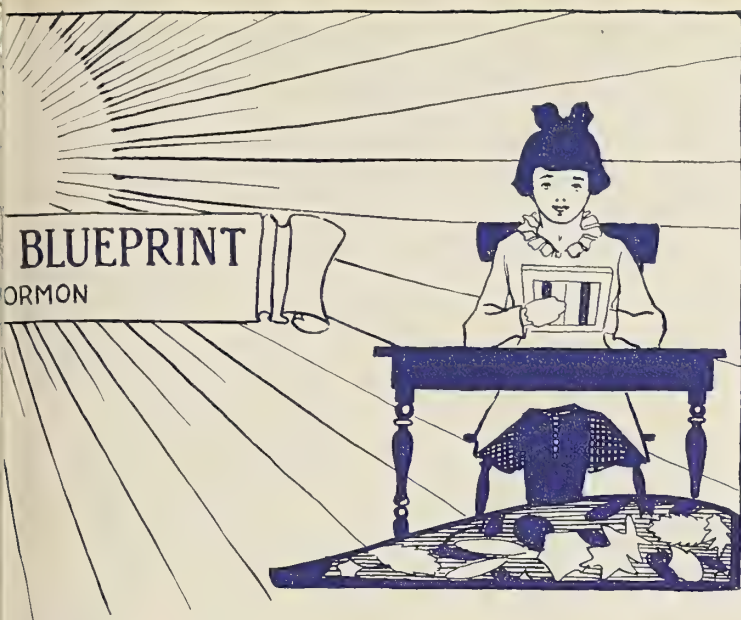
The exquisite



Dainty, tiny flower-cups and leaves of winter huckleberry make a pretty combination



The beautiful



Queen Anne's lace at any stage makes a good subject

exposed to the light. If the leaf is of rather thick texture, it takes five minutes of bright sunlight to get the veining. Flowers seldom take more than one minute. The time of exposure depends largely on the species.

The prints may simply be washed in clear water; although the most satisfactory work is passed through a weak solution of chromate of potash. Of course, clear water must be run over the prints after they are removed from the potash bath. They are then spread on a blotter or smooth cloth to dry. They are attractive framed or mounted and collected in a portfolio.

In arranging studies, bulkiness should be avoided, as there is danger of breaking the glass when the clamps are fastened; also, the flatter the study the better the print. The leaf or flower should be perfectly dry before the paper is placed on, or the print will be spotted.

One often wishes to preserve interesting leaves gathered on a trip to the woods. If pressed, they are so fragile that they are soon broken and ruined. But these and other treasures of the forest may be kept and enjoyed indefinitely if blueprints are made of them—the odd bloom of the fringe-tree, the “winged” seeds of ash and maple. The specimens may be carried home and printed at leisure; or the printing-frame is easily carried along, with a black envelope to keep the prints from the light until they are washed.

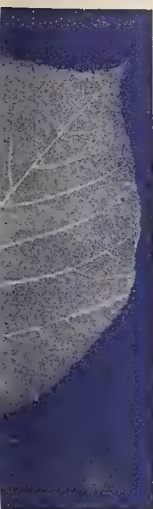
Grown-ups are also interested in making blueprints. The botany teachers at Newcomb College, at New Orleans, had a class of mature



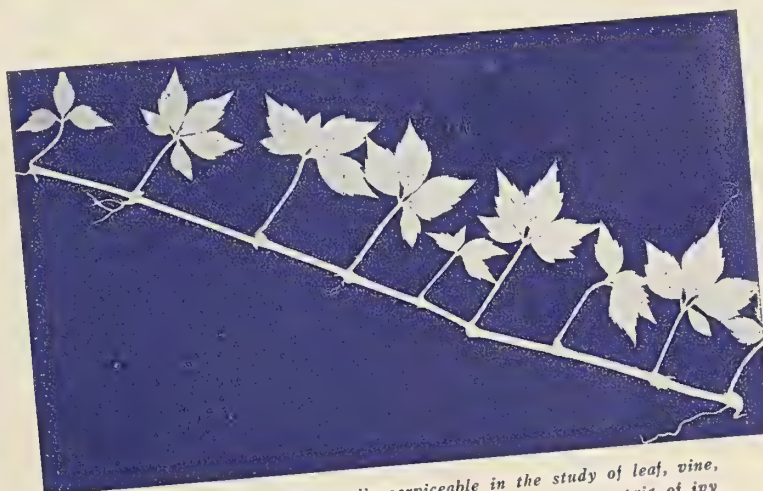
haw print



The flower-sprays of sourwood are strikingly like lily-of-the-valley



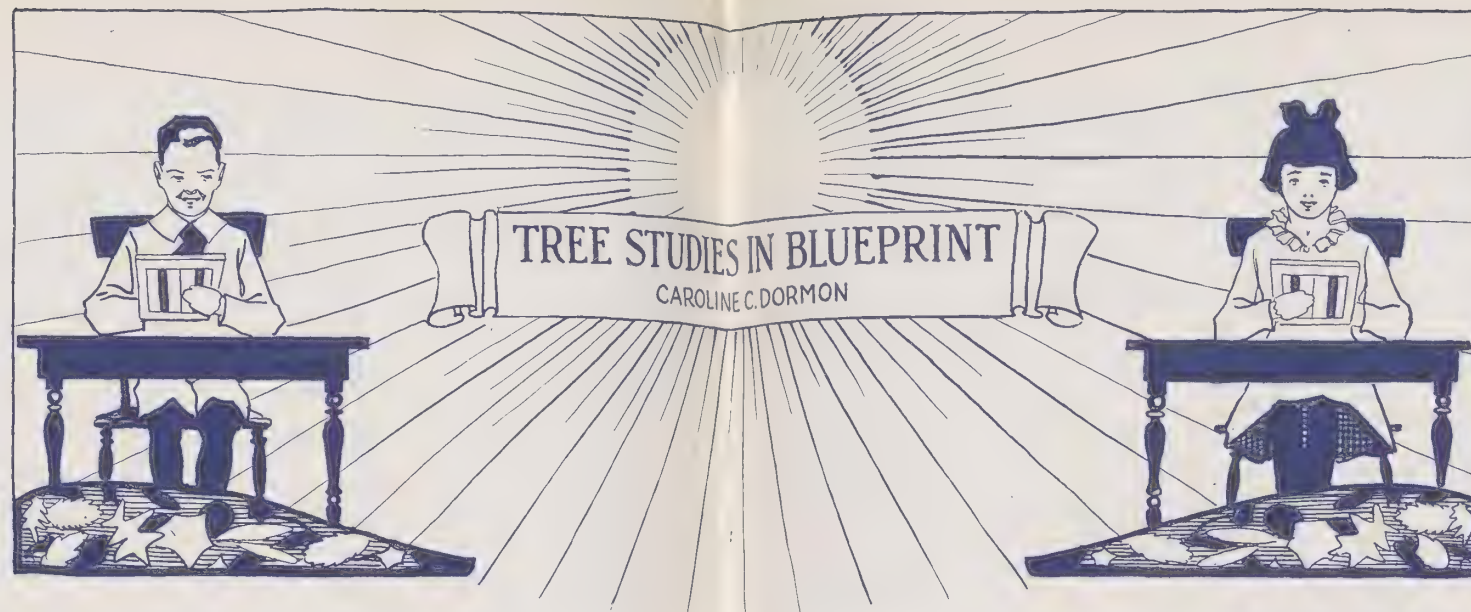
of the linden



The blueprint method is equally serviceable in the study of leaf, vine, and flower, as shown by the reproduction of this delicate sprig of ivy



A feathery frond of the familiar asparagus fern



Queen Anne's lace at any stage makes a good subject



The leaves and winged stem of sumac

TO THOSE who can read it aright, trees tell a lovely story—a story of dainty blossoms, veined leaves, and seeds of varied form. But how to get this story in such a way that all may read and enjoy is the problem. There is the camera, which is expensive and requires skill. There is the rather intricate and tedious method of mounting the specimens. There is the old custom of making impressions on paper smoked over a lamp, which is dangerous for young children without close supervision by grown-ups. And a few are talented enough to be able to sketch the trees. But the simplest, cleanest, and least expensive way to get a record of leaf, blossoms, and seed is to blueprint them.

There is nothing finer than blueprints for nature study in the schools. The making of them fascinates the children, and there is no waste of material, as only one leaf or a tiny spray of blossoms is needed for a print, and dozens of prints may be made from one subject. The fact that the material is so inexpensive places the work in the reach of all. Little children in a few minutes learn to make the prints and revel in the work. There are no dirty hands and no close supervision is necessary, as there is no danger.

Nothing is needed for the work but a printing-frame, which may be purchased at any kodak shop, and the blueprint paper. The best quality of paper should be used, as the cheaper grades will not show the finer lines in leaf or flower. The study is arranged on the glass, the paper placed over it, the back clamped on, and it is ready to be



The exquisite leaves of parsley-haw print beautifully

exposed to the light. If the leaf is of rather thick texture, it takes five minutes of bright sunlight to get the veining. Flowers seldom take more than one minute. The time of exposure depends largely on the species.

The prints may simply be washed in clear water; although the most satisfactory work is passed through a weak solution of chromate of potash. Of course, clear water must be run over the prints after they are removed from the potash bath. They are then spread on a blotter or smooth cloth to dry. They are attractive framed or mounted and collected in a portfolio.

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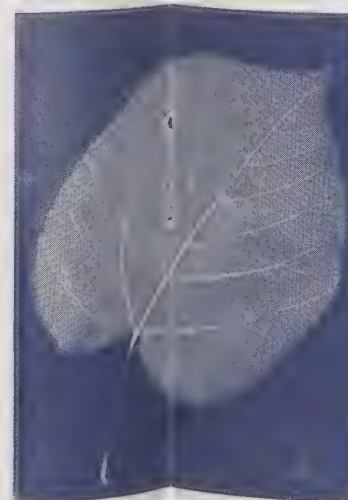
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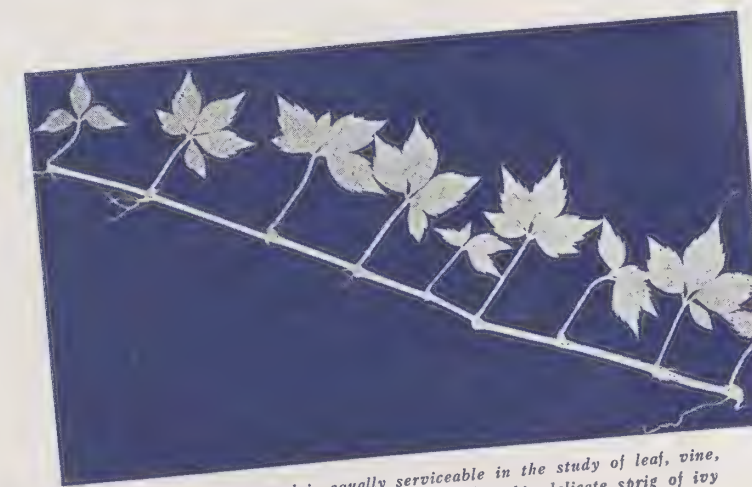
The flower-sprays of sourwood are strikingly like lily-of-the-valley



Dainty, tiny flower-cups and leaves of winter huckleberry make a pretty combination



The beautifully veined leaf of the linden



The blueprint method is equally serviceable in the study of leaf, vine, and flower, as shown by the reproduction of this delicate sprig of ivy

women who made some splendid prints of leaves last spring, and this summer one of the teachers at Louisiana State Normal had nature-study classes make them. At a Girl Scout camp, and later at a Campfire Girls' camp, this summer, I introduced the making of blueprints, and the girls were delighted. They became so interested they even "cut" swimming and, wonder of wonders, were deaf to the mess-call!

The permanence of the prints makes them desirable for

class-work, as they may be kept for reference and used from time to time. Excellent prints made by one class may be used in this way to stimulate, through a friendly spirit of rivalry, the desire to excel. The method has been used to some extent in schools, but deserves more attention from teachers. The children like it, and, oh, the joy of a private collector at finding so simple a way of holding the grace of leaf and blossom for study by a winter fireside!

Sale of Pulp Timber from Alaskan Forest

The Cascade Creek Unit of pulp timber, located on Thomas Bay, in the Tongass National Forest, Alaska, has been awarded conditionally to the firm of Hutton, McNear & Dougherty, of San Francisco, according to an announcement by the Forest Service of the United States Department of Agriculture.

This sale, involving 334,000,000 cubic feet of timber, or about 3,340,000 cords, is the largest sale of pulp timber ever made by the Forest Service. Indeed, so far as the records of the Forest Service show, the Cascade Creek Unit is one of the largest single sales of pulp timber ever made in any country.

The buyer has complied with all the terms specified by the Forest Service in the advertisement of the sale, which has been running for the last four months.

The Cascade Creek Unit is the second of fourteen pulp and paper units in the Tongass National Forest within which sales have been awarded following legal advertisement. The prices bid are 60 cents per cord for the Sitka spruce timber, which forms 27 per cent of the stumpage, and 30 cents per cord for the western hemlock, which forms 72 per cent of the stumpage. The remaining timber is composed of western red cedar and Alaska cedar, for which the contract price is 60 cents per cord. These prices are in accord with the minimum advertised rates. The stumpage alone is sold, of course, title to the land remaining in the Federal Government.

The original prices will stand until April 1, 1931, at which time, and at 5-year intervals thereafter, the Forest Service has the right to readjust the prices to the extent of making them conform with the then prevailing prices for similar timber on the Tongass National Forest. The sale period extends until March 31, 1956, but the timber will be paid for only as it is cut, in installments of not more than \$20,000.

The purchaser has agreed, as part of the consideration for the timber, to build a pulp-manufacturing plant of not less than 100 tons daily capacity, and ultimately with a daily capacity of 200 tons, at the Cascade Creek water-power site, on Thomas Bay, 20 miles from Petersburg, Alaska, within the Tongass National Forest. It is understood that the firm plans to install a complete newsprint plant with a daily capacity of 200 tons.

According to the plans of the Forest Service for this sale unit, as well as for all pulp timber developments in Alaska, the timber will be cut on a perpetual-supply basis, enough seed trees being left to insure complete natural reproduction. The volume of pulp timber and the area of timber-growing land within the unit, reserved from other disposition, are sufficient to afford a permanent source of raw material for this enterprise.

Under the perpetual timber-supply plan at least 1,500,000 tons of paper can ultimately be produced in Alaska every year.

Committee on Elections Named

At a meeting of the Board of Directors of The American Forestry Association, on September 10, the following Committee on Elections was named: R. Y. Stuart, Commissioner, Department of Forests and Waters, Pennsylvania, Chairman; George W. Sisson, Potsdam, N. Y., a director of the American Forestry Association, and William B. Greeley, New York, Chairman of the Committee on Conservation of Forests and Wild Life, Camp Fire Clubs of America.

Under the by-laws of the Association, the president, twenty-one vice-presidents, and the treasurer are elected annually, as well as a number of directors for stated terms. The elections are held by letter ballot from the members of the Association.

The Committee on Elections is charged with the duty of nominating candidates for every officer to be elected at the next annual meeting of the Association. Other

nominations, however, may be made by not less than twenty-five members of the Association, the nominations to be signed by the members submitting them. The Committee on Elections is desirous of receiving suggestions for nominations, and these suggestions, and all nominations signed by not less than twenty-five members, should be in the hands of the committee on or before November 1. They should be addressed "Committee on Elections, American Forestry Association, Lenox Building, Washington, D. C."

In addition to the election of a president, vice-presidents, and a treasurer, there will be seven vacancies to fill in the Board of Directors on January 1, three for terms of five years, one for a term of four years, one for a term of three years, and two for terms of one year. Nominations will be published in the December number of the magazine and letter ballots later furnished all members.

My First Cabin in the Hills

BY ETHEL G. LEWIS

Winner of Third Prize in American Forestry's Story Contest, "The Forest Ranger's Wife"

SOME generations ago one of my ancestors felt the moving spirit come upon him so strongly that he put himself and his belongings on a sea-going vessel and landed eventually in New York State. Some years later another grandfather, hearing of the vast open spaces in the Middle West, loaded his family onto a wagon and drove his ox team over unbroken ways until he reached the land of his heart's desire, in the fertile valley of the Mississippi. But I feel safe in saying that no ancestor, sea-going or ox-driving, ever arrived at his destination with a greater number of aches, or a greater variety of pains to the square inch of flesh, than did I when that first horseback ride was ended and I reached the ranger station that was to be my home for the summer.

We left the little city where we were living early in the evening, and all during that night rode a bit, and changed cars oftener, until, having traveled some seventy miles, we alighted from the last evil-smelling day coach and saw a little settlement of lop-sided shacks. After a breakfast at the general store, we were met by the ranger of that district and taken to his station by team. Here the horses were saddled, packs arranged on the pack-horses,

and things made ready for the nine-mile ride over a rude trail. I took my final look at a woman, for there was slight chance of my soon seeing another. These people were our nearest neighbors, for in all the quarter of a million acres in the ranger district to which we were going not a single settler lived.

When the horse was brought up, I swung into the saddle as nonchalantly as one does swing whose only experience with horses dated back to childhood days and a wheezy, weak-kneed, blind-in-one-eye pony. I recall that I felt that I had already done a day's work, but I have since learned that a forest ranger recognizes no union hours. And so we began, or perhaps continued, our journey, traveling along the trail, single file, never letting the horses off a walk. Soon the woods grew darker and the sun, which a few moments before shone dimly through the branches, disappeared. The rain came. This meant dismounting, unrolling from the back of the saddle the slicker which had been fastened there. Slickers are loose-fitting,

rubbery-smelling rain-coats, always affected by horseback riders in damp climates.

On again, and the march proceeded. As time went on, I bumped up against trees, the rain pelting me in the



THE RANGER, RECOGNIZING NO "UNION HOURS," UNLOADING HIS HORSE AFTER A LONG, HARD TRIP



THE DISCOURAGINGLY BARE AND UNATTRACTIVE CABIN, AS WE FOUND IT



AND AFTER THE ADDITION OF A PORCH, SOME COMFY CHAIRS AND GREEN PLANTS

face, the colors in my hat began to run, giving to my face and hair a ghastly bluish tinge. The horses wallowed in the mud. My steed kept three feet on the trail and the fourth dangling over the edge of any likely looking precipice he might spy. I remembered the sleep I hadn't had the night before—but nothing interrupted our steady advance. I had been told that it was a short ride of nine miles or so, but I know now why the informer put especial accent on the "or so." No one with a limited vocabulary can describe the peculiar and infinite number of aches and pains that can be developed by one person on a first horseback ride of nine miles "or so." After æons had elapsed the ranger station came into view. I stumbled off my horse, hobbled frog-fashion up a few steps into a bare-looking room, saw a cot, and speedily my troubles were forgotten.

The next morning I was awakened by a succession of strange noises. A chorus of bells carried up from the pasture, an angry little creek roared and brawled along just under the window, and over all murmured the wind, as it swept through the forest-covered hills. At that time all the sounds were unfriendly and vaguely alarming, but they became so much a part of things that I missed them poignantly when they were lacking.

The cabin lay in a little cleft in the hills. The only unbeautiful things anywhere to be seen were those placed there by Uncle Sam. Perhaps he figured that any necessary thing was a thing of beauty. The ranger station was made like a hundred others, with a straight front buttoned-down-the-back look and an after-

bathtubs are considered. But this place was built in an earlier era.

The inside of the cabin was divided into two rooms, the front one being used for the office and the back one was the kitchen, dining and living room. There was no unnecessary furniture, and when one remembers that every piece, from the big kitchen range to the slimmest toothpick, had been hauled in on the backs of pack-horses, it can readily be seen why luxuries did not abound.



THE WIFE OF THE FOREST RANGER LEARNS TO LOVE THE FOREST-COVERED HILLS, WITH THEIR LIMITLESS VARIETY

At times, I have been asked, "What did you do out there, all by yourself, all the summer, no place to go and no one to talk to?" There was always plenty to do. The wife of a forest ranger can play one of the nicest games I know, the make-something-out-of-nothing game. It is surprising how clever one can get at it, too. That summer, with the aid of a saw and hammer, a few sticks, and some odd pieces of lumber found in the barn, and a goodly bit of advice, several very credible pieces of furniture were made. Of course, they would not stand close scrutiny; but the table held food, the cupboard held dishes, and the chair supported a person of medium weight, provided he distributed that weight cautiously. Paint, kalsomine, curtains, and pictures did their bit, and the cabin took on a comfortable look.

Anyway, the days were filled. The question of cooking was not as simple as one might imagine. It took real thinking to make the menu as attractive as possible. Fresh fruits, vegetables, milk and cream we never knew, and although deer were in our yard almost every night or morning, being law-abiding citizens, we never knew the taste of fresh meat. We did have trout, freshly caught from the cold waters of the creek. In the spring a small garden had been planted, which was protected from the deer by a high fence. As summer advanced, the favorite outdoor sport was to carry water from the creek for an hour or so every evening. But the lettuce and few hardy vegetables we saw venture forth more than repaid for the trouble, and a fresh carrot was more to be desired than strawberries in January.

I had planted a few pansy plants, and never have I

[Continued on page 632]



SUCH PERFECT BEAUTY AS THIS, OF HOLLAND LAKE IN THE STILL EVENING, COMPENSATES FOR MUCH

thought of a porch, which was a handy place for the leaving of saddles, boxes, and similar articles. There was the flag floating from its high pole. If a person has once identified one ranger cabin, he can never by the wildest stretch of the imagination mistake another. In more recent years, however, stations are being built more like homes for white folks, and in the kitchen is installed running water, and on some forests, so I have read, even

Public Forests and Private Forestry

How Publicly Owned Forests Create a Spirit of Understanding and Stimulate Co-operation in the Protection of All Forests

BY HENRY S. GRAVES

A GREAT deal has been said about the service of public forests, their contribution to the supply of timber, their value in conserving water resources, and their use for recreation. Less thought has been given to the influence of public forests on private forestry. The existence of a system of well-handled public forests will do more to solve the private forestry question than any other single factor. This fact is one of the greatest arguments for public forests; it will often be a governing consideration in the working out of an acquisition program.

It is well for the country to recognize that our forest problem is not going to be solved by the public alone. Most of the forest land of the country is privately owned today. It would be much better if most of the forests were in public ownership, and I am an advocate of acquiring public forests just as extensively as is possible. But let us not delude ourselves into thinking that this acquisition work can be placed on a scale actually to enable the public forests to produce the bulk of our needed timber or to meet our other needs for forests. No matter how much one may theorize, it simply won't happen. To do this the public would have to take over something like 150 million acres more than is now in public lands. In over a decade there have been acquired less than three million acres by all the states and all the municipalities throughout the country. Public acquisition of forests proceeds slowly at the best. We must work for a large program of public forests, but we must still recognize that we shall have to look to private forests for a large part of the timber production of the future, just as we do today, and for this reason it is of the utmost importance to the public that our private forests be well handled.

THE BACKBONE OF FOREST FIRE PROTECTION

A well-managed public forest has a great influence on all the near-by private forests. It may make private forestry possible where otherwise it would fail. It is a center of co-operative activities that will be a powerful factor in local economic development. It is often the public forest that prevents regional impoverishment by forest devastation.

The first service of the public forest in private forestry is to secure a more efficient protection from fire. It has been clearly demonstrated that protection from fire must be a co-operative enterprise in which all owners participate, each doing his part. Such co-operation is difficult except under the guidance and with the material help of

the public itself. The best protection has been brought about where the public co-operation centers about a well-managed Government or state reservation. In the Northwest private efforts in fire protection have been especially noteworthy; the system was brought about as a direct result of the work on the National Forests. Throughout the West, it is the private lands near the National Forests that have been given the best protection. The establishment of National Forests in the southern Appalachian Mountains gave the first real basis for protection in that region.

The public forest furnishes a practical demonstration of the methods of protection. New methods are tried out and their efficacy and cost proved. The public forest is a permanent establishment. An experienced man is in charge. Private owners are glad to join with the Government or state in a common undertaking under such circumstances, even to the extent of placing the actual administration of the protective work on their lands in the hands of the public officer.

THE NATIONAL FORESTS A CLEAR EXAMPLE

This principle is well illustrated in the co-operative work secured by the Forest Service in connection with the National Forests. In the Northwest the co-operation with individual companies whose land was in or adjacent to the National Forests has developed into a great system recognized by state laws, in which all owners participate. The private owners have formed fire protective associations and are able to act as a unit. These associations include the bulk of the large holdings and many small ones. These owners and the Government and the states have an organized system of protection that brings into co-ordination the protection of all lands, the cost being equitably prorated. The backbone of the system is the National Forests. They constitute the permanent foundation that gives stability to the undertaking.

In California the protection of private lands is even more governed by the public forests. There are in existence in that state many co-operative agreements with private owners whose lands aggregate a large acreage adjacent to the public forests. It is very questionable whether more than a small fraction of these lands would be under protection today if the Forest Service, with its trained personnel, were not present to direct the work.

In the East one finds the same principle exemplified in the fire protective work of New York and Pennsylvania.

It is about the state forests that the most intensive and most efficient protection of private lands is secured. Where there are no public forests the protection lags; private co-operation is more difficult and the efforts often spasmodic. The situation in Michigan has recently been revealed in an illuminating article in the *Journal of Forestry*. The author, Professor Watson, clearly shows the need of state forests as a basis for adequate fire protection on private lands. He says:

"Before any private outfit will give money to the state for fire protection, as co-operators do with the Forest Service, the state organization must show itself capable of delivering at least a semblance of good protection. It must have a working nucleus of many state forests, well cared for, to sell the idea, in the first place, and secondly to afford the basis, the foundation, for larger and more extensive operations. . . .

"In Michigan we might very easily, through no greater appropriations than we get now, by 1935 have fifty intensively handled state forests, totaling a million acres, under good management, scattered over the northern part of the state. . . . These forest reserves should form the nucleus of a state-wide fire-fighting organization. It would be an organization to which private outfits could tie with some certainty of receiving good, earnest, well-studied-out, effective co-operation."

PUBLIC FORESTS PRACTICE WHAT THEY PREACH

The public forest is not only a center for fire protective work, it serves also as a demonstration ground for the practice of silviculture. We do not have in this country as abroad, a background of long experience in the practice of forestry. The methods of silviculture are generally little known and sometimes they are untried. The actual demonstration of forestry is more effective than all the advice from experts and in literature that can possibly be given. The general adoption of methods of close utilization, of care in protecting young growth, of providing for reproduction, of holding immature trees for growth, of improvement thinnings, and other forestry measures has followed some actual experiments. An immense amount of educational work is necessary to get private owners to use the methods of forestry. The most effective agency of education is the public forest on which forestry is actually being practiced.

One of the purposes of forestry is to build up and maintain on a permanent basis the lumber and wood-using industries. At the present time the great element of uncertainty is the temporary character of the ownership of a great deal of the private forest land of the country. The tendency to liquidate forest investments leads to the exhaustion of the forest supplies in a given region and the closing of the local industries previously dependent upon these resources. It is uneconomic and disastrous to local development to clear off all the forests periodically. It results in a wilderness without people, a wilderness of forest or a wilderness of waste.

PRODUCING FORESTS A STABILIZING INFLUENCE

Where the forests in a region are not stripped off, but the mature trees alone are cut, there is a basis of continuing the local industries. It is often, if not usually, the presence of the public forests that brings about a condition of sustained production from forests, in contrast to periodic wholesale stripping. The public forest, handled on the principle of cutting and using what is produced by growth, is a stabilizing influence in the whole region. Industries are able to count on definite quantities of raw material each year. As surrounding private forests are brought into the same general system of management, a new industrial strength is created that reacts upon agriculture and the development of the whole locality. This principle is applicable to the large forest regions; it applies equally to the sections of small forests and small forest industries.

In order to secure on a substantial scale the service from public forests indicated in the foregoing pages, it is essential that these properties be well distributed and of course also well administered. The influence of public forests on private forestry is mostly local. People will not go long distances to see the demonstration of forestry. This is especially true in the regions where the private forests are chiefly in small holdings.

The policy of confining the public forests to one part of the state is not the wisest in the long run. It is a splendid thing for New York to have a great public forest in the Adirondacks. It should be extended to take in the bulk of the mountain land. But there should also be state forests distributed through the other portions of New York, each a center for fire protection, each a demonstration ground in the practice of forestry, each acting to stabilize and make permanent the local wood-using industries and forest ownership.

Pennsylvania has adopted a different plan. Her state forests are distributed in many counties. The local effect of these forests will be far greater than if the same area were centralized in one part of the state.

DISTRIBUTION OF PUBLIC FORESTS IMPORTANT

A good deal of progress in forest protection has been made in Maine, and, curiously, many people in that state are opposed to a system of state-owned forests. The conservative character of ownership of the forest land and the special problem of the pulp and paper industry contribute to the good work being done. But much more progress and greater fire security would be obtained if there were distributed through Maine a chain of state forests, each well handled and illustrating the methods of practical forestry. Public forestry in Maine would not mean, as many there seem to think, an encroachment of government in the field of industry, but it would mean better conditions for private forestry and for the local industries.

The establishment of public forests is not the only measure essential to bring about the practice of forestry

on private lands. The existence of public forests insures a state forest organization that is actually engaged in field forestry. State laws relating to fire protection and forestry practice can most effectively be carried out through such a field force, composed of men who know local con-

ditions and who are in constant touch with the forest-owners of the region.

A system of public forests does not do away with the need of legislation relating to private forests, but furnishes the best possible means to make such legislation effective.

Watershed Protection in Dollars and Cents

BY F. S. BAKER

"Protect the watershed values!" It makes a fine-sounding battle-cry doesn't it, and it is one that conservationists and foresters have been yelling till their throats are sore. Fine sentiment, no doubt about it, but coming down to earth, exactly what are these values that are to be thus protected? Are they dollars, cents, or mills? It's easy to say, "Destroy the watershed values and you destroy farming," and to deal in other charming generalities. To put the thing into dollars and cents is hard. But here's a stab at it, anyway.

Take the Snake River valley in Idaho, for instance, with acres and acres of irrigated farmland, great dams, reservoirs, cities—real cities with big stores, movies, crooks, automobiles, and flappers. Water, just plain water, running in little streams in far-away forests did it all. It took sagebrush desert worth maybe \$5 an acre and made it worth \$45. Now don't go and think up all the \$200 land you know of. The assessed valuation of irrigated lands in six counties in the upper Snake is \$43.61, so \$45 isn't a bad average at all, for assessed valuation. There are two and one-half million acres of this land. The increased value due to water is \$40 per acre—multiply it yourself—one hundred million dollars total. Now, if we judge by the Minidoka Project—not because it is especially fine, but because it is the only thing we can find information on—the value in cities and public utilities created equal that of farm values, or one hundred million dollars more. Credit water with two hundred million dollars! Now, how many acres did it come from? Well, there are nine million acres of National Forests that certainly sent down lots of water, and then there are perhaps three million acres of other fairly high country in between, up Lost River way, on the edge of the Yellowstone Park, and so on. (I don't figure that the very early water from the scanty snows on the plains themselves amounts to much.) Twelve million acres created two hundred million dollars values then, or about \$17 to each acre. Pretty good—what? But wait! That is the value of the mountain watersheds per acre, not the value of proper protection that we are forever harping upon. Cut down the trees, burn the land, turn on ten million goats and pigs to destroy

the forage, and grub out the roots, marshal armies of bark beetles to riddle away surviving trees, in fact simply ruin the whole works. The mountains will still stand there. The heavy snows will still gather on the peaks and the great drifts will melt slowly through the midsummer. Are the high, rough mountains like the barren Sawtooth Range valueless as sources of irrigation water? We will say they are not. Do what you will, you can't ruin the whole \$17 value of these watersheds. All right. But we can cut a hole in it—just how big it is hard to say. If the watersheds were ruined, vast quantities of silt would come down, the great reservoirs would clog up before paid for, canals would need cleaning every few minutes, maintenance charges would go up, and the poor farmers would long for the good old days back in 1922 when spuds were 40 cents per hundred and banks only went busted once or twice a year. Maybe the country would go back to where it was before the great projects were built—when irrigated farming had only one-eighth its present value. We would have destroyed seven-eighths of \$17 or about \$14. If watersheds were not so badly treated, things probably would not come to this pass. Nevertheless, silt, rocks, and junk would come down. The usefulness of dams would be impaired, annual charges would soar, late water would be short, especially where reservoirs were small, and crops would become smaller—and naturally land values and prosperity would go down. Probably your estimate on this is as good as mine, but it looks to me as if half of the great values created could be rather readily destroyed through the mismanagement of watersheds—that is, about \$8 an acre. What do you think? Therefore, we of the Forest Service are custodians of values of \$8 an acre in watershed protection alone, to say nothing of other values involved.

As we said at the start, we were just taking a stab at the problem as it looks to us. Maybe the Snake River basin in Idaho presents exceptional values, maybe not. Anyway, be as it may, and admitting a whole lot of flaws in the figures, it certainly does show up watershed protection as something pretty important in dollars and cents, now, doesn't it? You have got to admit it.

"Doing Its Bit"

The United States Department of Agriculture has an annual income of about \$8,500,000, earned through service and regulatory work and sale of products. It is interesting to note, that of this total the Forest Service

alone contributed over \$4,500,000, or 53 per cent, derived from the sale of timber, grazing fees, and fees for the use of forest land. It is noteworthy that this business is increasing and is conducted on a plan of perpetual income.

Forest People

THIS column is devoted to stories about real men and women who are doing original, interesting, and worthwhile things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell our readers about them. Manuscripts should not exceed 700 or 800 words, and, if acceptable, will be paid for.

"Koehler, What Kind of Wood Is It?"

BY B. B. BORCHERS

KNUT REINDAHL, a famous violin-maker, at Madison, Wisconsin, made some years ago a violin of exceptional quality, which he later presented to Fritz Kreisler. Recently, Reindahl desired to make another violin out of the same kind of wood, but he was suddenly brought to the realization that he did not know what kind of wood he had originally used. He succeeded in locating some remnant pieces from the original violin, but the more he studied them the more confused he became as to the species of trees they represented.

He asked many friends, but no one could tell him with certainty what kind of wood it was. Finally a friend said, "Ask Koehler; he knows."

"Koehler," replied Knut, "who is he?"

"Why, he is the man out here at the Forest Products Laboratory who looks at wood through a microscope and can tell you all about it."

Knut Reindahl hastened out to the Forest Products Laboratory and was told by Koehler that the samples which he had submitted were Sitka spruce, which grows nowhere else in the world except in a 40-mile strip along the Pacific coast, extending from California northward.

Arthur Koehler has studied wood ever since he got his first whipping with a willow switch. Today he is in charge of the Department of Wood Technology at the United States Forest Products Laboratory, Madison, Wisconsin. He can usually look at a piece of wood and tell you what kind it is—that is, if he wants to. However, he generally does not do it that way. With a sharp knife he slices off a thin section of the wood, places it under a microscope, and looks clear through it. Then he knows definitely what kind of wood it is, for he identifies it by its cell structure. There is little chance for error, because practically every species has definite characteristics which distinguish its wood substance, provided you can see it under a high-powered lens.

"It is easy enough to identify a living tree," said Mr. Koehler. "A forester or timber-owner knows a sugar maple, for instance, by the size and shape of the tree, the bark, the leaves, and the seeds.

"Yet the lumber from that same tree looks much like that of soft maple, or even birch or beech. An experienced lumberman can identify sugar-maple lumber, but he cannot tell any

one how to distinguish it from other maples. He says, 'There is a difference in the grain.' Ask him to describe



ARTHUR KOEHLER

The man at the Forest Products Laboratory who "looks at wood through a microscope and can tell you all about it."

that difference in the grain, and his verbal description is so general that it might be applied to ten other trees.

"The appearance of lumber to the unaided eye is not always enough to assure a person that he is right in judging wood to be of a certain species. Red-oak and white-oak wood look much alike, yet the living trees have marked differences in the leaves, the seeds, and the bark.

"When viewed under the microscope, every wood has characteristics of its own. We identify woods by definite differences in structure, rather than by vague general appearances. The microscopic differences which we find in wood are in many cases just as pronounced as those in the exterior parts of the living tree."

Hundreds of concerns and individuals send pieces of wood to Mr. Koehler. Many requests are prompted merely by curiosity; others are the result of various commercial disputes. Sometimes, in fact, whole carloads of lumber are held on a side track while Koehler, at his office in the Forest Products Laboratory, is identifying the wood over which a dispute has arisen between the seller and buyer.

The average number of samples received daily in Mr. Koehler's office is from sixteen to twenty. In the month of September, 1918, when the government permitted no substitutes in wooden parts of war equipment, over 3,000 pieces were passed upon. This is the record month in the history of the office.

"People submit all kinds of samples for identification," said Mr. Koehler. "They come from all kinds of articles, old and new; from all parts of the United States and from many foreign countries. Many of the specimens have stories behind them."

During the recent remodeling of the liner *Leviathan* at Newport News some three-fourth-inch plywood panels were torn out of the ship's cabins and pieces of them were submitted for identification. The panels were made largely out of Scotch pine, spruce, and alder, which are woods common in Europe, where the giant liner was built. However, some of the faces of the panels were made of yellow poplar, which is a distinctly American species.

Recently, a piece of wood dug up twenty feet below the street level in excavating for the Walker Hotel, at Washington, D. C., was sent to Madison, where it was identified as cypress. Geologists claim that the trees grew thirty thousand years ago. The specimens under the microscope looked like the common cypress wood of today.

A part of the spire of the Zion Reformed Church at York, Pennsylvania, built in 1798, was identified as black

locust. This wood, which is reputed for its high degree of durability, has given good service for over a century.

Every one likes to know of what kind of wood his furniture, household appliances, athletic goods, and other articles are made. When one wishes to know the kind of wood in a valuable article of furniture, the identification can be made without disfiguring the piece. In one case the frame of a dressing-table mirror was identified by removing the hinges by which the mirror was fastened and taking a small sliver from the frame underneath the hinge. The mirror was then replaced and the wood identified without making any visible marks on the dresser.

Pipes are often sent in for identification. The sender may want to know if they are French briar, as claimed by the manufacturer or salesman. Certain woods, particularly mountain laurel, called lilac in the East, are used in place of French briar and closely resemble it.

Often people get very excited about specimens they wish to have identified. One man wrote: "If this wood is cypress, Noah was a Swede." Mr. Koehler's verdict was that Noah was a Swede all right, for the piece was cypress, but it had been stained and did not look natural.

A mail-order house, desiring to have its descriptive catalog fully and accurately posted, requested identification of a large number of wooden articles which they proposed to sell.

Another firm wrote: "We are sending you today by

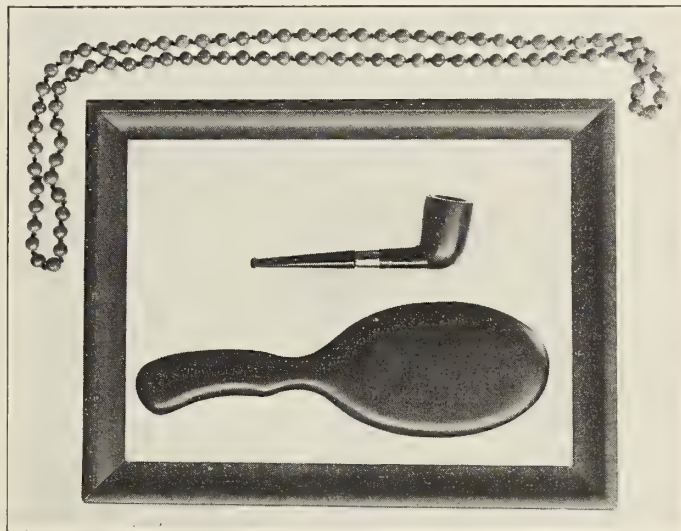
parcel post a box containing a hair-brush, a military brush, and three strings of beads. We would appreciate an identity of the woods used in each."

The handle of the hair-brush was identified as cocobola, a high-grade tropical wood. The military brush was of West Indian boxwood, and the beads of Turkish boxwood.

Several years ago some specimens were sent in which had been taken from the bottom of a railroad cut fifty feet deep. This wood, which according to geologists had been covered up by a glacier over 500,000 years ago, was still sound enough to be identified as spruce. It had been badly crushed, but the cell structure was still plainly visible under the microscope.

Petrified wood has also been identified. In such wood the pores are filled with mineral deposits and the cell walls are replaced by minerals of a different nature. In this way an outline of the original structure of the wood is preserved and identification is made possible.

"We can even identify charcoal, because the cell structures remain fairly intact as the wood is changed into charcoal," said the microscopist. "A dealer in artists'



WHAT KINDS OF WOOD ARE IN THESE?

This little group of articles indicates the numberless things made of wood which are received daily at the Laboratory for identification—pipes, hair-brushes, beads, and picture-frames galore.

supplies once had some French charcoal crayons identified. These crayons are supposed to be superior to anything made in America. We found them to be from the European spindle tree, which is a close relative of our native wahoo. Very likely the native tree would make just

as good charcoal crayons as those manufactured in France."

So, if you have a piece of wood you want identified, just send it to the Forest Products Laboratory and ask: "Koehler, what kind of wood is it?"

The Man Who Fathered the Pines

BY V. H. SONDEREGGER

"**C**HIEF, my one wish is that I can have all of the cut-over lands in my district of 5,000,000 acres covered with pine trees about 25 feet high. That is the monument I want to leave to my children and the State."

I was dumfounded and, at the same time, appreciative of the man's statement, as this was his introduction to me at the time I was appointed State Forester of Louisiana. Upon further questioning, I found that Norman Core, chief ranger of the Florida Parishes, was thoroughly fit for his work. He knew his people and he knew his trees. He could tell me all about the varieties of timber, why they grew and how they grew.

After inspecting his district this spring, I found that over 70 per cent of his area is now free from fire damage, and that millions of young trees from one to three years old are growing on the cut-over areas.

"Norman," I asked him, "how are you doing it? What system are you using? Eighty-five per cent of the people here are with you and helping you, and the results are shown in the lack of fires you have and the wonderful reproduction of young trees."

"Well, Chief, you see it is this way: I was born and raised in this section some forty years ago. My daddy was a farmer and small mill operator. I could not go to school much and had to work with him, so I learned all about my neighbors—who they were, what they did, and how I could talk to them. Trees are God's gift, and man's duty is to help replace that gift for our children and our children's children. Five years ago I was offered a job as patrolman for the Forestry Division of the Department of Conservation. I believed in the forestry work and liked it so well that I have been

at it ever since. The way I got the local folks to help was by telling them that all the little trees were my children and that I was the proudest daddy in the world, and that they must help me take care of them. I can stand for a whole lot of darned meanness, but one thing I won't stand for is the burning up of these young pines, my adopted children."



NORMAN CORE, PROUD "DADDY" OF THE YOUNG PINES

Mr. Core has worked his way from patrolman to Chief Ranger and his achievements have been exceptionally great. He has reduced the fires to a small per cent and has won over the great majority of the people to the cause of reforestation and fire prevention.

"Experience"

"My experience as petroleum is small as I have only been forest petroleum for only one year.

"One fire I have had experience in was one on the rocky mountains. I was trying to put the fire out and I thought that the fire was almost out when the wind rased and it broke out a new. the way it burn it was excitiabale. the flames was running to the top of the trees and I had warried untill I was almost give out

but the fire was about to burn up on me. then I started to run up the mountain to rest. then the fire was burning up on me again I got up started to run again, then I got up till I could rest and get me a drink. by the time that I had got my watter the flames had caught up with me again. then I jumped up and run up to the top of the mountain when I reached the top I was so sick and tird I could hardly go."

A TENNESSEE RANGER.

County Agents and Farm Forests

By K. W. WOODWARD

MRS. BROWN was hurrying to get her breakfast dishes done before the men came. The meeting was an anxious one for her. What was to be done with her woodlot would be decided for better or worse within two hours. Were the careful plans of the last year to bear good fruit? Was she carrying out her husband's will? Was she doing the best for the children? If everything went well, there would be money to keep the older girl at normal school and a long start toward the college expenses of the boys. She couldn't help running over in her mind the steps that led up to the eventful meeting of the day, carefully scanning each to see if there had been any misstep.

First, there had been the offer to buy the woodlot outright, land and timber included. The price mentioned had at first staggered her, hard pressed as she was to make both ends meet. But she recovered herself enough to put off any definite decision, when she remembered that this particular buyer had the reputation of never offering in his first bid more than half what a lot was worth. Then, too, she and her husband had agreed that the farm must be kept intact. It had been in the family two hundred years, and surely one of the two

boys would carry on the family tradition. On the other hand, if the timber was mature, why not cut it to help out in their urgent need for ready money?

In this time of perplexity it happened that Miss Smith, the county home demonstration agent, came to visit her. They were friends, because each had helped the other, Miss Smith by a hint that saved many stitches in the family sewing and Mrs. Brown by her famous biscuits and clean house when Miss Smith was surfeited by hotel meals and hotel smells. Miss Smith could offer no practical suggestions, but her sympathy was comforting and she had faith that the County Agent could help. Not realizing that a knowledge of handling tillage land and

woodlot management were two separate and distinct things, she had appealed to the County Agent in Mrs. Brown's behalf.

"What do I know about estimating timber?" was the rejoinder of the County Agent.

"At least you can tell her who will treat her honestly."

"You do me too much honor, Miss Smith. I am not a County Diogenes. I'm just a County Agent. Tell her to write the State College. They'll tell her about woodlots. I have troubles enough with milk and hay and pigs."

The State College did its best; but a general letter, even backed by circulars, does not answer specific questions about a particular woodlot. In fact, the circulars gave Mrs. Brown a new worry by their emphasis on cutting mature timber in such a way that desirable second growth would be secured. This brought back to her how careful her husband had been to take care of the young trees in all his cutting operations. So she had to find the answers today to two questions:

1. What is our timber worth?

2. How shall it be cut so as to do the least damage?

The County Agent attended the meeting for several reasons. Miss Smith

hadn't let him forget his promise to be there in the first place. Then, too, Mr. Brown, before his death, had been one of his best supporters, and the Agent was glad to be of any service to Mrs. Brown in her plucky fight to keep the farm going and educate her family. Moreover, he was chagrined at his own inability to offer constructive suggestions about what was becoming so important a farm crop. Here was a chance to learn and supplement the brief course in forestry which he had had in college. But he came away with a deeper sense of his lack of training in woodlot problems. He was even angry with his *alma mater* for allowing him to graduate with such inadequate training for his job.



MRS. BROWN'S MATURE TIMBER—EACH TWO ACRES OF IT WOULD KEEP A YOUNGSTER AT COLLEGE FOR A YEAR

It was, then, a distinct relief to his feelings to jerk his car into its best speed on his way home and assure himself that he would never, never again mix in woodlot problems. In fact, he had worked himself around into a much more comfortable frame of mind by thinking of some specially interesting problems in his own specialty of dairying, when he was hailed by one of his constituents who was busy weeding a badly overgrown corn field.

"What shall I do to get rid of this witch grass? It'll smother the corn in another week."



MEASURING THE TIMBER ON A FARM WOODLOT BEFORE OFFERING IT FOR SALE—AN IMPORTANT PRELIMINARY IN REALIZING THE FULL VALUE OF THE CROP

"How did you let it get such a lead on you?" countered the Agent. "I thought you knew better than to put off your cultivating so long."

"It's my fault, right enough, but I had that firewood contract to fulfill and only finished on the last day, and the price was so good that I neglected my corn field. Now I've got to pay for it, I guess. But I would like for you to come out and see this woodlot. We got a fancy price and thinned out all the hardwood. That ought to give the pine a good chance."

But the County Agent couldn't share the owner's enthusiasm when he saw a lot of slim, bushy-crowned pines scattered around over ten acres where the hardwood had been cut out. He remembered from his college lectures the dangers of sunscald and windthrow and knew from his own experience that oak and ash and paper birch paid



WHERE THINNING IS NEEDED BADLY. SKILFULLY AND CAREFULLY DONE, IT WILL NOT ONLY BRING AN IMMEDIATE REVENUE, BUT WILL ADD TO THE INTRINSIC VALUE OF THE REMAINING STAND

as good dividends as pine. The cordwood had been cut from a thrifty young stand of mixed hardwood and pine that made good chopping, but there was an equal amount of good firewood in another part of the woodlot, where its removal would really have been of benefit.

"This woodlot business is getting me," muttered the County Agent, as he resumed his way back to his office. "I'll take no chances on meeting any one else. I'm not fit to talk any more today. I'll beat it home by the back road and get back my self-respect by working on something I know."



HOW NOT TO THIN—CUTTING OUT THE HARDWOODS HAS LEFT AN IRREGULAR, PATCHY STAND, MORE OR LESS SUSCEPTIBLE TO SUNSCALD AND WINDTHROW

But a public servant like a County Agent can't hide himself, even on a back road. He was easing his car carefully over the bumps and around the sharp turns when he came full upon a fencing crew from the adjoining big dairy farm.

"What're you doing on this road? No place for a County Agent! But since you're here I'll ride down to the house with you. It'll save me a trip into town to see you."

The dairyman forthwith poured into the County Agent's ear a moving tale of constant struggles with inefficient help. To meet his contracts with the summer hotels he was furnishing with milk, he had to greatly increase his force during the summer. He had tried every one—natives, foreigners, college students, and high-school lads. All were unsatisfactory. If a man did learn the game during the summer, he didn't come back the next year. He was now figuring on an entirely new plan, having enough work during the winter to keep his force the year round and depending as far as possible on steady married men. Lumbering seemed the answer. It would keep teams and men busy at profitable winter work. What he wanted to know from the County Agent was how much woodland he should buy, how fast it would grow, and a dozen other things.

In this sketchy way, the problems which County Agents

are having put up to them every day may be appreciated. It isn't fair to expect them to solve them. Their training has been almost wholly tillage-land training. The woodlot has become a crop-growing part of the farm since many of them graduated from college. Before, it was only a mine. Trained foresters who will approach the problem from the farmer's point of view, just as the experts in poultry, orcharding, etc., fit their plans into the general scheme of farm betterment, are now needed. No new organization is necessary. The present extension service can be expanded along lines approved by experience to meet this need, which has forced itself into notice in many and widely scattered portions of the United States.

Secretary Wallace, recognizing the new order, has given his approval to such a plan and charged the Forest Service and the States Relation Service with working out the details. The National Farm Forestry Extension Committee, with representatives in every state, has set as its goal in the next ten years a Forestry County Agent for each county in the United States that has sufficient woodlot interests. This committee is the outgrowth of a meeting of state foresters and farm extension experts in New Haven in February of this year, where the whole situation was carefully canvassed and the program agreed upon.

New York Foresters Meet

The supply of softwoods has become a world problem, Col. Henry S. Graves, President of the American Forestry Association, told the midsummer meeting of the New York State Section of American Foresters, held at Cranberry Lake, August 16, 17, and 18, where the members gathered at the Sophomore Camp of the New York State College of Forestry.

Colonel Graves said that Great Britain was facing this big question squarely, and that the empire was planning for an adequate supply of timber for all time. The speaker, who had just returned from a conference held by the Imperial Forestry Commission in Canada, seemed to have been tremendously impressed with the hold that forestry has taken upon civilized nations. He said that this movement was more formidable than heretofore because the public is more seriously concerned than it ever has been. He said that the conditions of timber supply in the United States was reaching a point where it will be possible to obtain constructive remedial legislation. He said it was time to focus public sentiment on this project, and that while it might not be possible to obtain all that is desired, in legislation immediately, yet the prospect of a long step forward was in view. He added that this could be accomplished by the support and enactment of proposals made by the Department of Agriculture in the form of the Clark Bill. He said the scale along which we have been working was out of all proportion to the size of the problem, as this question today involved one-third of the land of the country. The tremendous portion

of our wealth represented in this area demands a great deal larger program than that comprehended by the Clark Bill, but Colonel Graves urged that the most important thing was to get a start. He suggested that a national forestry congress be held as soon as possible for giving exclusive consideration to the forestry problem.

Ralph S. Hosmer, head of the School of Forestry at Cornell and President of the Society of American Foresters, reviewed work now in hand by various committees. He said that a committee had been appointed to suggest and report on a plan for supplying material from which a history of forestry in America will probably be written. He also said that a committee on professional ethics, a committee on policies concerning the *Journal of Forestry* and a committee on establishing closer relations between sections of the Society would probably report at the next meeting of the Society, which will be held December 27 and 28, at Baltimore.

Samuel T. Dana, director of the new experiment station just located at Amherst, Massachusetts, suggested the organization of a research council to facilitate the solution of problems and to help guide agencies connected with this work for his district in properly functioning. The council should not be given mandatory power. It should be a body organized merely to offer advice and to correlate information obtained from the various interested agencies. The council should have representatives from the forest schools, lumber companies, and all organizations represented in forestry, with a changing membership.



EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

Forest Fires and Future Forests

THE spectacular side of forest fires—the sweeping fires that devour whole forests, wipe out towns, and destroy human life—are pretty well known to the public. But there is a humdrum, inconspicuous side of forest fires that the public does not know, but needs to know. In many respects it is the very heart of our present forest problem.

We refer to the destruction of young trees and tree seed by forest fires. Foresters, lawyers, and timberland owners often bicker as to the value of young forest growth, or indeed whether it has any value. Elaborate mathematical formulas have been invented for trying to determine the value of young, unmerchutable forests.

But isn't the problem, after all, very simple? Here is fire, devouring on an immense scale the young forests on which we must depend for our future forests. Here is an immense and growing demand for timber. The two

things don't jibe. We can't grow timber by burning up the second crop as soon as it starts. Fire is destroying our potential forests. At its present rate, our entire forest area of 470,000,000 acres will theoretically be burned over every 50 or 75 years.

What actually happens is that great areas are swept by fire every few years, until they are completely devastated—devoid of tree growth and tree seed. Already more than one-sixth of our whole forest area is reduced to this tragic condition. Fire is the tool that has brought this about—fire, the evil shadow of destructive lumbering and the fruit of American carelessness.

It is bad enough to burn up mature timber, for we can ill afford to lose a stick of it, but it is far worse to permit this destruction of the young forest. The immense energy and fruitfulness of nature are balked and brought to naught by this yearly orgy of negligence.

New England as an Object-Lesson

DURING September the Senate Committee on Reforestation held public hearings at opposite poles. First, on the Pacific coast, where lumbering is reaching the heyday of its development, and during the latter part of the month in New England, where American lumbering had its crude beginning more than two centuries ago. That these two extremes of conditions supplied much interesting and valuable information for the committee goes without saying. Undoubtedly, contrasting the different points of view—those from the West, where lumbering of virgin forests is near its height, and those from New England, where the problems of renewing virgin forests long since destroyed are acutely present—gave the members the broad and sympathetic grasp of the subject essential to its equitable solution.

Conditions in New England were of special interest to the committee, because New England is pointed to as the one section of the country where economic laws are forcing a solution of the forest problem in very discernible ways. By many, it is held up as an object-lesson. There is no doubt that New England is in the vanguard of forest progress. It is a field rich in object-lessons and constructive forest thought. But New England is yet far from solving its forest questions. The experience of the past few years has shown conclusively that forest-fire protection, well organized as it is, is still far from perfect. The control of forest insects is far short of what it should

be, although insects are today undoubtedly causing far more damage than fires. Reforestation, whether by natural or artificial means, is failing to keep pace with deforestation. Overcutting and improper methods of cutting are bringing about a gradual but steady deterioration, rather than a sudden devastation, of the forest resources of the region.³ Insufficient research is being conducted to point with certainty to the best methods of cutting to use with different species and under different conditions. Forest taxation, in spite of the passage of various laws attempting to relieve the situation, notable among which are the recent Massachusetts and New Hampshire laws, is still unsolved. The area of publicly owned forests, whether federal, state, or municipal, is insignificant in comparison with those privately owned and with the opportunities for useful service.

This is the darker side of the picture. On the other hand, it must not be overlooked that New England offers more examples of intensive forest practice by private owners than any other area of equal size in the entire country. More encouraging still is the attitude of receptiveness on the part of timberland owners generally, and their desire to place their holdings on the basis of continuous forest production. More and more clearly the pulp and paper industry is realizing the necessity of protecting its large capital investments by maintaining its supply of raw material. Farmers are recognizing more fully the value

of their woodlots and are calling for assistance in their management. Demonstration and experimental forests, such as those of the Harvard Forest School, the Yale Forest School, and Bate College, are having an important influence in pointing the way to better methods and improved practice.

Many elements in the situation are favorable to the rapid progress of forestry within the next few years. New England's forests are its most valuable natural resource. Climatic and soil conditions are exceptionally favorable for reforestation. Forest owners generally appreciate the importance of maintaining the productivity of their land

and the permanent character of the ownership of the forests, together with their proximity to good markets, favors the introduction of better methods as soon as these are definitely known.

Thus, New England warrants watching. No other region is better situated for really substantial achievements in forestry or is more alive to its opportunities. AMERICAN FORESTRY is gratified by the interest shown by the Senate committee and is confident that its New England hearings will pave the way for rapid and substantial progress in placing the forests of this and other regions under equitable management.

The Fruitful Earth

TO ONE who knows the woods, trees present an astonishing vigor of life. Everywhere are these living things, eager to drink in the rainfall and the sunshine, aspiring—it would seem—to touch the sky. With immense harvests of seed they fructify the earth; with immense broods of young they keep up the eternal cycle of life and death. The old trees die; the young begin a grim and crowding race for the light that is life. Year after year the struggle goes on. In the fight for sun-

light, the stronger at last overtop the weak, and so have a chance to come to maturity. And so, in nature, the endless cycle is ever renewed.

Man would be a fool not to make use of this urgent vigor of life, this mighty driving force to live. He would be a fool to destroy it utterly in its magnificent vitality. It is a thing so easy to perpetuate, so responsive to man's will, that we might as well set torch to our grainfields as destroy our forests. To the living, life!

Give Our Wild Fowl a Chance

TO THOSE who are following the illuminating series of articles dealing with the destruction of wild fowl in the United States now appearing in AMERICAN FORESTRY, it will be apparent that protective measures, added to those already accomplished, are immediately urgent. This is particularly apparent in the case of our waterfowl, in the extermination of which man's efforts to reclaim, by drainage and irrigation, new lands for agriculture are a major factor. That these two interests, waterfowl conservation and agricultural needs, conflict in some cases is undoubtedly true, but we believe that there are relatively few instances that cannot be readily adjusted with mutual advantage.

So far as waterfowl are concerned, one trouble seems to be that the reclamation of swamp lands goes forward with no thought of our waterfowl needs and too often with inadequate and irresponsible knowledge of our agricultural needs. Many instances are cited where swamp lands which have formed the homing grounds of our waterfowl have been drained, and, because of inadequate knowledge of our agricultural needs or soil factors directly involved, both the land and the breeding grounds of millions of waterfowl have been wrecked. In some cases, it is charged these drainage projects are the work of promoters, whose main objects are monetary gains rather than the interests of the farmer or the sportsman.

Certain it is that the unnecessary destruction of the homes of our waterfowl is a crime against man and bird. We have not yet reached the economic pass where all our marsh lands must be drained to meet our agricultural

needs. We are hundreds of years from that point. As a matter of fact, we shall never reach it, because the American love for hunting and recognition of the meat value of our wild life will demand economic recognition along with agricultural. Furthermore, the insect-destroying value of bird life is an important factor in the agriculturalist's success.

There is a common meeting ground for the two interests, and this the game-refuge and public-shooting-grounds legislation introduced in the last Congress seeks to provide. Briefly, this legislation, if passed, would make it possible for the Federal Government to purchase or rent and to maintain marsh and water areas especially suitable for migratory wild fowl throughout the country, these areas to be used as free public shooting grounds in the open hunting seasons and safeguarded as breeding and resting places for these birds during the closed seasons. Instead of heedless destruction of our remaining waterfowl breeding grounds on the mistaken theory that every acre of land which can be made available is needed for crops, the legislation would provide a balance of interests, where the national value and need of wild-fowl conservation will be weighed and given its proper recognition and execution.

Similar legislation will be introduced in the new Congress. The principle will have the strong support of the American Forestry Association. In behalf of our wild fowl, it is urged that every man and woman who believes in justice and fair play give it their active support. Does your congressman favor this legislation? If not, let him know how you feel about it. He represents you.

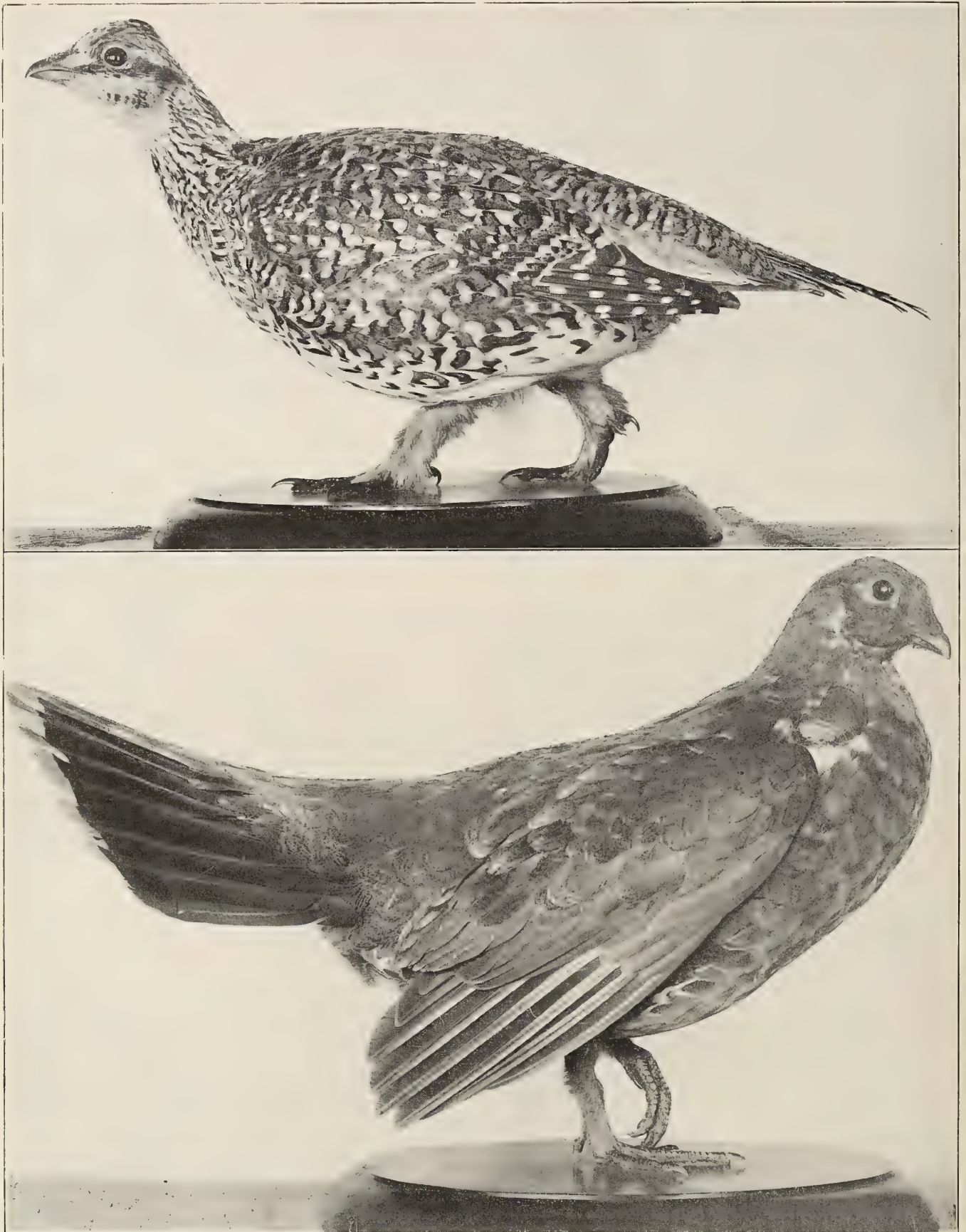


FIG. 4, *UPPER*—SHARP-TAILED GROUSE ARE USUALLY KNOWN AS THE PRAIRIE CHICKEN OF THE NORTHWEST. ANY SHALLOW HOLLOW IN THE GROUND ANSWERS FOR ITS NEST, AND THE HEN, LINING IT WITH FEATHERS AND GRASS, MAY LAY AS MANY AS 16 EGGS, WHICH ARE OF AN OLIVE GRAY COLOR, SPECKLED ALL OVER WITH SPOTS ABOUT THE SIZE OF A PINHEAD

FIG. 5, *LOWER*—THIS DUSKY GROUSE OR BLUE GROUSE IS A WESTERN BIRD, CONFINED CHIEFLY TO THE ROCKY MOUNTAINS FROM UTAH TO ARIZONA AND WESTWARD TO NEVADA, WHERE SPECIMENS MAY STILL BE COLLECTED IN THE EAST HUMBOLDT MOUNTAINS. IT LAYS FROM 7 TO 10 EGGS, WHICH ARE SPECKLED ON A PALE BUFFY GROUND. THE NEST IS A VERY SHALLOW AFFAIR, USUALLY NEXT TO A LOG, BEING SCANTILY LINED WITH PINE NEEDLES AND GRASS

Grouse and Quail Exhibition in the Bird Hall of the United States National Museum

By R. W. SHUFELDT



FORTUNATE it was for ornithological science in general and for its many votaries throughout the world in particular that the late Mr. Nelson Rush Wood came to be the taxidermist who mounted the majority of such fowls as the turkeys, grouse, quails, and their numerous congeners for the bird exhibit of the United States National

Museum. In the opinion of many naturalists his work along this line stands as unrivaled examples of the taxidermic art, and this is especially true of what he accomplished in the case of the gallinaceous birds, or the group containing the pheasants, grouse, partridges, quails, and their allies.

Through the courtesy of the Museum, as extended by Dr. James E. Benedict, chief of exhibits of that institution, I was permitted on the 24th of November of this year to photograph some fifteen of the mounted specimens of the

North American representatives of the turkeys, grouse, and quails referred to in the last paragraph, and reproductions of the majority of these appear as illustrations to the present article. They were made on $6\frac{1}{2}$ by $8\frac{1}{2}$ negatives, or in nearly all cases considerably over half the size of life, though most of them have been somewhat reduced here in order to meet the requirements demanded.

So well have these birds been posed and prepared that in every instance they give the student of them a most accurate presentation of the living fowl as it may be seen in nature; and this renders the exhibit one of especial value.

The pictorial representations of our American grouse and quails as left us by the earlier ornithologists are, as a rule, by no means true to life or in any way satisfactory; consequently it is very much to be hoped that the figures of them, or such of them as are figured in the present article, will be appreciated by all who may be interested in the ornithology of this country in general and in our game birds in particular.



FIG. 1—TWO MALES OF THE MASKED BOB-WHITE OF ARIZONA. THEY WERE NAMED BY THE LATE MR. BREWSTER *COLINUS RIDGWAYI* FOR MR. ROBERT RIDGWAY, THE EMINENT AMERICAN ORNITHOLOGIST. AN ADULT HAS A LENGTH OF SOME 10 INCHES, BEING REDDISH BROWN ABOVE MIXED WITH BROWN, BLACK, AND GRAY; ORANGE-CHESTNUT ON THE UNDER PARTS. THIS SPECIES LAYS PURE WHITE EGGS, WITH SOME 6 TO THE CLUTCH

When we came to study such a collection of birds as the one here being noticed, it is certainly a great pleasure to meet with such a pair of mounted quails as the two Masked Bob-Whites here shown in Fig. 1. The one to the left is especially well done, the pose being characteristic of the species, or, indeed, of our quail or partridges generally. Such a piece of work could never have come from the hands of an artist unfamiliar with the habits of this species and its immediate allies. Mr. Wood, however, who, I am told, mounted this pair, was a very keen observer of our game birds in life, and not in their native haunts alone, for he at different times kept many of the species as pets, studying them very closely and using the knowledge thus gained in his work.

George Gladden, in describing this species, which is generally known as the Masked Bob-White (*Colinus ridgwayi*), says the "plumage is strikingly different from that of his eastern cousin. He is a handsome little chap in his bright chestnut-colored waistcoat, which looks red in the sunlight, and, like most of his tribe, he seems to be very well aware of the fact. * * * From much of their normal range in the Southwest these attractive and interesting little birds have been driven by advancing agriculture and the accompanying man with a gun, intent upon destroying every living thing for food or for 'sport.'

"In the vicinity of Tucson, Arizona, not so very many years ago, the birds were so plentiful, tame, and persistent in their habit of keeping closely bunched in coveys of fifteen or twenty that it was no uncommon thing to kill five or six at a single shot—on the ground of course. And yet many people wonder about the disappearance of wild life!"

In this exhibit of the gallinaceous birds in the United States National Museum there are many other very beautifully prepared specimens of our quail or partridges, while a few others are not so good. Many years ago I photographed from life such species as the Scaled Quail, the Mountain Quail, the California Quail, and others; but as these have already appeared in AMERICAN FORESTRY

it will be unnecessary to reproduce them here, though it would by no means be an unprofitable task to compare the attitudes assumed by the living birds with those now exhibited in the collection we have here under consideration.

Of all the different birds I have photographed from life, I do not recall ever having secured the picture of any of our grouse in that way. As a matter of fact, living specimens of those birds have never come into my possession—that is, under conditions where I could secure photographic

pictures of them. Upon the other hand, I have had the opportunity to study many of the other species of our gallinaceous birds noticed in this article apart from the ptarmigans; and none of these latter have I ever seen in nature, inasmuch as I have never been in sections of the country where they are to be found.

Late in the seventies I shot our prairies hens or pinnated grouse in the immediate neighborhood of Omaha Barracks, Nebraska, at a time when I was stationed at that post as an assistant to the post surgeon. At one time a dozen of them were met with in a cornfield close to the hospital. There was deep snow on the ground; and, as they were by no means wild, it afforded me an excellent opportunity to study their attitudes before the bevy took to flight and my gun brought a brace of them to the ground. The one here shown in Fig. 2 is an admirable piece of taxidermy, a very natural pose of the bird being reproduced. It is a male specimen in full plumage, having been collected on January 30, 1894, by Mr. H. R. Attwater, south



FIG. 2—PINNATED GROUSE ARE ALSO CALLED PRAIRIE CHICKENS, PRAIRIE HENS, AND PRAIRIE GROUSE. AT ONE TIME, DURING THE EARLY PART OF THE LAST CENTURY, THE BIRD OCCURRED IN GREAT NUMBERS FROM THE MIDDLE WEST, ACROSS THE COUNTRY TO THE ATLANTIC SEABOARD. THEY ARE NOW EXTINCT EAST OF INDIANA. A CLOSE CONGENER OF THIS GROUSE IS FOUND IN LIMITED NUMBERS ON MARTHA'S VINEYARD

of Beaumont, in Jefferson County, Texas.

There is very considerable and very natural action seen in the specimen of the Oregon Ruffed Grouse here shown in Fig. 3, collected at Salem, Oregon, on September 11, 1886. The bird often steps off in this way and keeps up the pace for a few rods before taking to wing—a fact that most hunters have noticed. Some fifty or more years ago I shot these birds—that is, the eastern form of them—in Fairfield County, Connecticut, at a time when they were very abundant and one could bag four or five a day with-

out a dog. In the winter time, when three or four feet of snow covered the ground, this grouse, when flushed, would occasionally plunge into it, run beneath its surface for several rods, and then suddenly emerge in full flight and make its escape, usually being sufficiently far away from the gunner to escape his aim.

We have another fine grouse in this country that somewhat resembles the Ruffed Grouse, with the exception that it does not possess the "ruffs" at the shoulders. This is the Sharp-tailed or Spike-tailed Grouse, and the mounted specimen of one of them here shown in Fig. 4 is an exceptionally fine example of scientific taxidermy.

Years ago I met with these birds in great numbers in central Wyoming, sometimes a bevy being composed of

they would again make off, and I would, maybe, knock another over. There was a bet made that I would make a bigger bag with my shotgun than he with his carbine, and the wager was a basket of champagne (\$60.00). It came to be nearly dark when a big flock took to wing not far from where we were resting, and all went to roost in a near-by cottonwood. I let him have the first shot, and he promptly shot the head off one that had lit high up in the tree. Much to my surprise, the entire bunch took to flight, and I tumbled one over with each barrel. Next came the count; the last bird saved me. Merriam had 35 to my 36, and next day met the obligation like "an officer and a gentleman."

We have another fine bird in the Dusky Grouse,

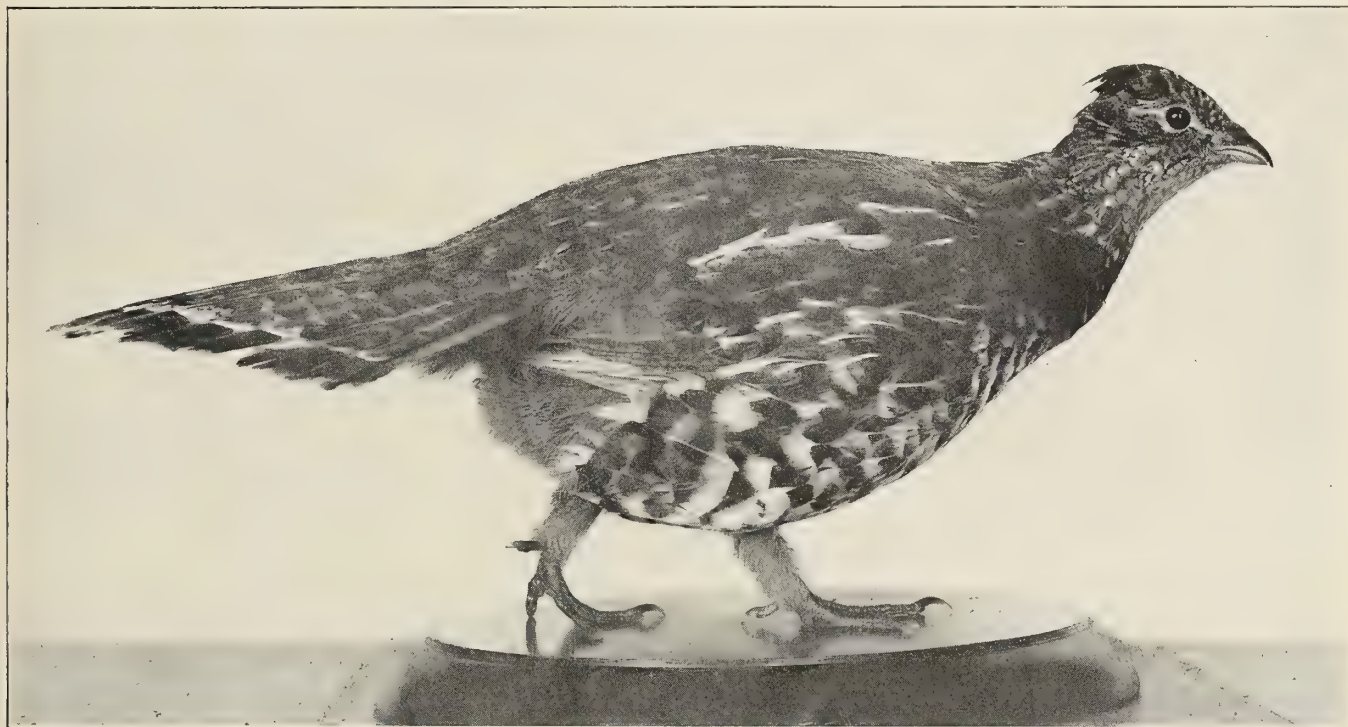


FIG. 3—IN DIFFERENT PARTS OF ITS RANGE IN THE UNITED STATES THIS SPECIES IS NOT ONLY KNOWN AS THE RUFFED GROUSE, ITS COMMONEST NAME, BUT AS GROUSE, BIRCH PARTRIDGE, DRUMMING PHEASANT, MOUNTAIN PHEASANT, AND SIMPLY PHEASANT. THIS IS THE BIRD KNOWN AS THE PARTRIDGE TO THE GUNNERS OF THE NORTH AND AS THE PHEASANT TO THOSE OF THE SOUTH

some 40 or 50 individuals. They behaved much like our Eastern quails, and could be worked with great satisfaction with a well-trained dog. They were more apt, upon being flushed, to take to trees than our quails are, and especially was this the case when one flushed the bevy toward night-fall and some big cottonwood was near at hand for them to fly into.

On one occasion, back in the '70's, I was hunting this grouse with Lieutenant Lewis Merriam, of the 4th Infantry, at a frontier post in Wyoming. He was one of the very best shots with an officers' .45 carbine in the entire army, and he carried one on this occasion. We would flush a big bunch of the birds, and I would generally manage to bag a couple with my shotgun, and sometimes he would kill one on the wing with his rifle. The birds would alight in some big tree a few hundred yards from the place where we put them up. Merriam would shoot the heads off of one or two of them in the tree, when

together with its several subspecies, there being excellent examples of them in the collection here under consideration, handsomely and correctly mounted by Mr. Wood.

Dr. Edward Howe Forbush has said of them that "The Dusky Grouse is a western bird, the largest and finest of American wood grouse. [See Fig. 5, a male, collected on the Hayden Expedition.] It is next in size to the Sage Hen and weighs two and one-half to three and one-half pounds. There are recognized races of this grouse, namely: The Dusky Grouse (*Dendragapus obscurus obscurus*) of the American Rockies; the Sooty Grouse (*Dendragapus obscurus puliginosus*) of the Pacific Coast ranges; Richardson's Grouse (*D. o. richardsoni*) of the Canadian Rockies and south to Montana and Wyoming, and the Sierra Grouse (*D. o. sierræ*) of the mountains of southern Oregon, California, and south to Mt. Pinos."

The Sooty Grouse and Richardson's Grouse are fine

birds, being western forms well known to sportsmen where they occur.

Of these various subspecies of the Dusky Grouse, the only form ever shot by me was the Dusky Grouse (*D. o. obscurus*), and I found the bird fairly abundant on the north side of the Big Horn Mountains, in Wyoming, in 1877, in the foothills of Cloud Peak. The gold prospectors there called them "Fool Hens" on account of their remarkable tameness and lack of fear of man.

On one occasion I was riding with some half dozen Sioux Indians across one of the open "parks" above the northern foothills of the Big Horns, carrying my double-barreled shotgun in my hand, resting on the pommel of my saddle, loaded with No. 4 shot. The grass was rather tall and thick, when of a sudden a pair of these Dusky Grouse took to flight directly in front of my horse, and I killed the two from my saddle. Three or four of the Indians trotted ahead to retrieve them for me. On the way back with the birds in their hands they were industriously endeavoring to locate the wounds where the shot had entered. None of them had ever seen a shotgun before, and so they expected to find such a wound as a ball from a carbine would make, judging from the bore of my fowling-piece. They were greatly mystified, but, Indian-like, they skillfully concealed the fact. My intentionally obscure explanation mystified them still more, and it was to my advantage to let it go at that.

Another well-mounted grouse in this United States National Museum collection is that of Franklin's Grouse (*Canachites franklini*), here reproduced in Fig. 6. It occurs in southern Alaska, south to Oregon, Idaho, and Montana, where it is known by a number of vernacular names, the most common one being the "Fool Hen." Many a time it has been killed with sticks or stones by those who have come across it upon its range, and a

writer at hand says that "George Bird Grinnell records an instance of one bird who sat still on a limb while a man shot at him several times with a rifle. The man was a bad shot, but finally a bullet cut a foot off the grouse; whereupon the bird simply shifted its weight to the other foot and continued to sit still until the marksman was at last successful."

This species is readily recognized by the lateral feathers of the upper tail coverts, they being black and broadly emarginated with white.

There is a very attractive specimen of the Hudsonian Spruce Partridge in this collection, here shown in Fig. 7. It has upward of ten vernacular names by which it is known in different parts of the country, for it occurs from the eastern base of the Rockies westward to Alberta, eastward to Labrador, in such parts of the country where it has not been exterminated by man. The plumage of a male specimen is well shown in the accompanying figure, and science has given the name of the species as *Canachites c. canadensis*.

Dr. Forbush in writing of this grouse has said that it "is a dweller in dark woods and tamarack swamps, north into boreal regions, probably as far as its favorite trees extend. The extermination of the southern race over much of its range in the United States is a blot on our history, as the bird always was harmless and interesting. It is hardy and fearless. It is too confiding, however, to exist in the neighborhood of civilized man—the most bloodthirsty and destructive of all animals. In the mating season the male struts about with bristling feathers, head, neck, and tail raised, tail expanded and body held level."

The Spruce Partridge appears to have no fear of man whatever—indeed, it is most interesting, not to say charming, to note the confidence it displays when a hunter

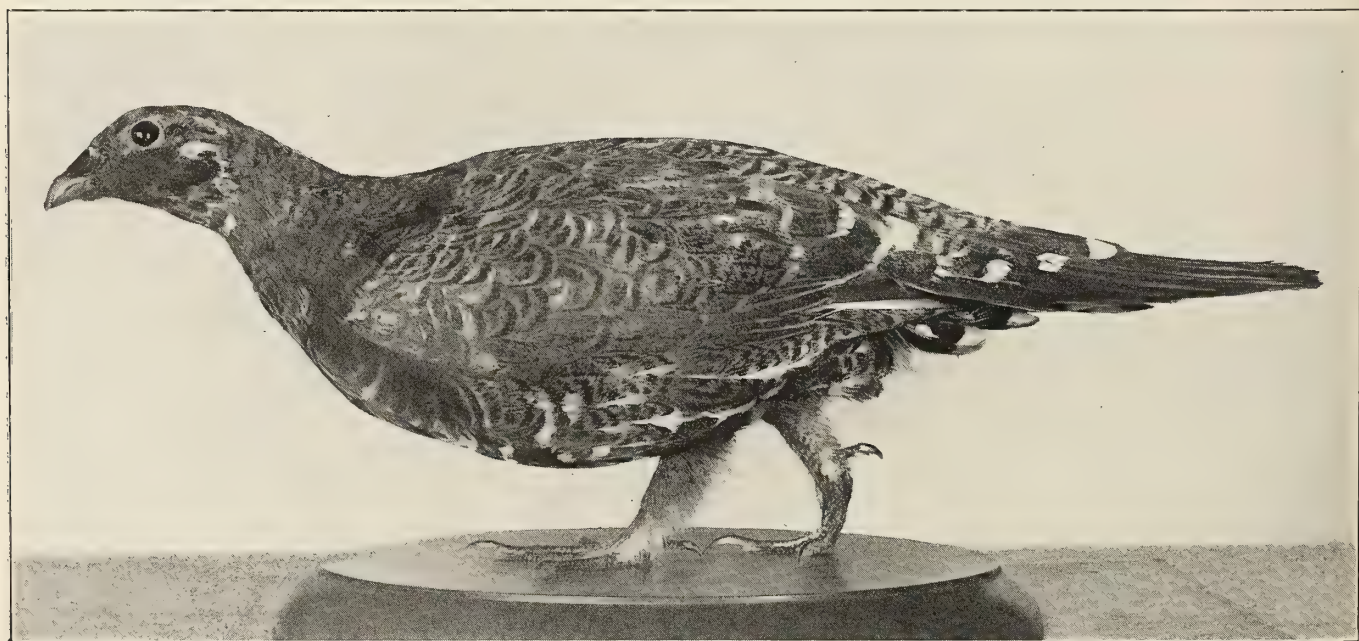


FIG. 6—FRANKLIN'S GROUSE, OR "FOOL HEN," HAS AS ITS RANGE THE AREA EXTENDING NORTHWARD FROM OREGON, MONTANA, AND IDAHO INTO CENTRAL BRITISH COLUMBIA AND ALBERTA TO AND INCLUDING THE LOWER PART OF THE ALASKAN PENINSULA. IT CAN BE DISTINGUISHED FROM THE HUDSONIAN SPRUCE GROUSE THROUGH THE ABSENCE OF THE TERMINAL ORANGE BAR OF THE TAIL FEATHERS. THE CONSPICUOUSLY WHITE-TIPPED FEATHERS OF THE UPPER TAIL COVERTS ARE QUITE DIAGNOSTIC

approaches it, that he means to do it no harm! Poor bird! it will cost you your life, for the average "sportsman" possesses not a jot of sentiment on such points.

Where it occurs in the neighborhood of Indian settlements or camps, the Indian boys often use only a stick to knock the bird over, or shoot it with their blunt arrows. It has even been picked by hand off the limb where it sits, innocently watching the approach of its destroyer. Often one may whip off its head with a switch. Apart from the wild turkey, the largest grouse we have in this country is the Sage Hen, or Sage Cock, also called in the books the Cock of the Plains. There are some splendidly mounted examples of this species in the collection here being described, especial reference being made to a pair displayed in a separate glass case, where the cock is shown strutting.

An old male collected at Fort Custer, Montana, in 1885, which in life weighed $6\frac{1}{2}$ pounds, I selected for an illustration, and reproduction of it is here shown in Fig. 8.

There are many excellent accounts published of the habits and habitat of this big grouse, and a very good one will be found in the Nature Lovers' Library, printed for

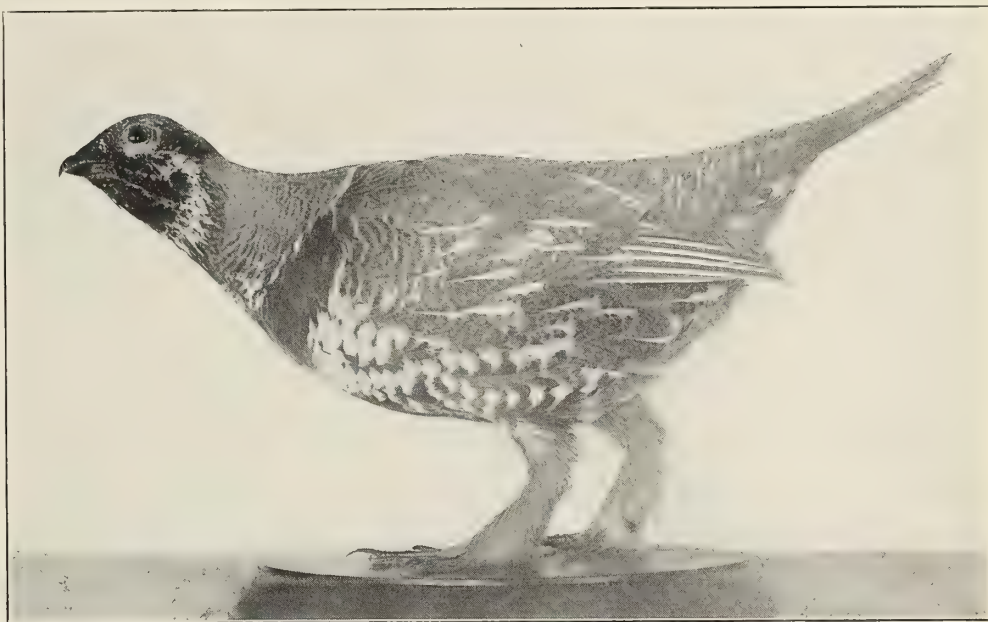


FIG. 7—THIS ILLUSTRATION GIVES AN EXCELLENT IDEA OF THE HUDSONIAN SPRUCE GROUSE IN ITS BREEDING PLUMAGE. THE POSE IS QUITE CHARACTERISTIC AND THE GENERAL APPEARANCE OF THE BIRD TRUE TO LIFE. IT OCCURS IN SOME PARTS OF ALASKA AND ALSO FROM THE EASTERN SLOPES OF THE ROCKIES, IN CERTAIN AREAS, TO LABRADOR. IT BUILDS ON THE GROUND, GENERALLY WELL CONCEALING ITS NEST, WHICH MAY CONTAIN AS MANY AS 14 REDDISH-BROWN OR BUFF-COLORED EGGS, PRETTILY SPOTTED AND BLOTCHED WITH DARK EARTH BROWN

the University Society of New York City (1917), pages 29-31.

With respect to distribution, the bird occurs on the "sage-brush plains from southern British Columbia, southern Saskatchewan, and northwestern North Dakota south to middle eastern California, northwestern New Mexico, and northwestern Nebraska."

Late in the seventies I found these birds very abundant on the plains of Wyoming, in the country stretching between the Powder River and the Custer battlefield, on the Little Big Horn River. I also observed a great many of them on the sage-brush plains south of the Big Horn Mountains. On the old military road in that section I once rode on horseback through a big flock of them and killed 13 full-grown birds with my quirt by simply striking at them from the saddle. Some of the men of the cavalry command I was with picked them all up, and they were eaten at the troop messes.

Forbush tells us that the Sage Hen "is one of the most remarkable fowls in the world. Nevertheless, the American people are fast exterminating it." By this time I must believe that the extermination is well-nigh complete; certainly so in many localities where this big grouse was once very abundant. When stationed

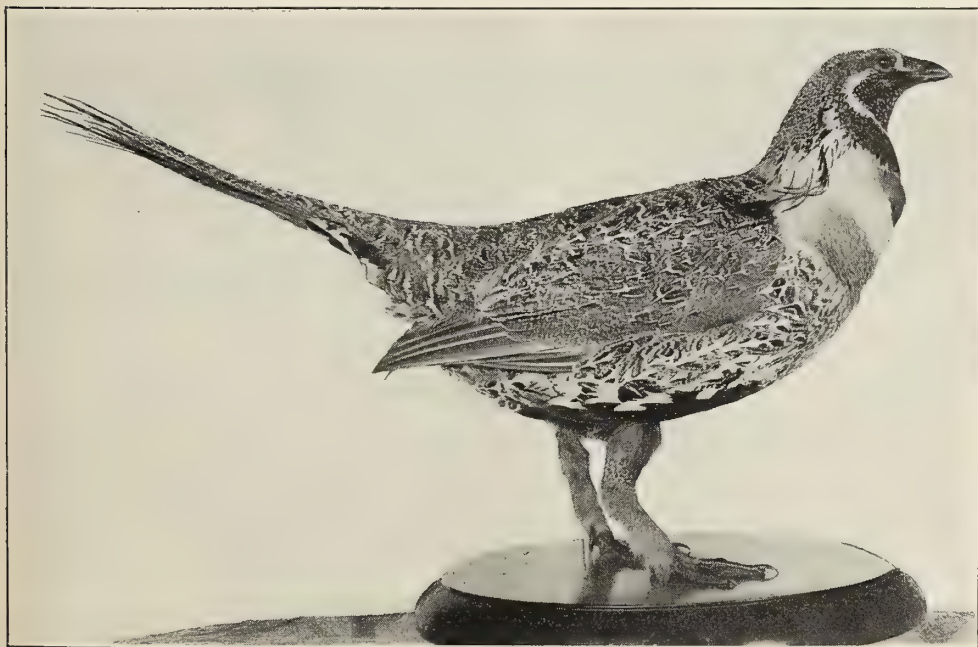


FIG. 8—THE SAGE HEN OR COCK OF THE PLAINS—KNOWN, TOO, BY OTHER NAMES—IS THE LARGEST GROUSE WE HAVE IN OUR AVIFAUNA. IT IS RAPIDLY BEING EXTERMINATED AND IN A COMPARATIVELY FEW YEARS WILL BE LISTED AMONG THE AMERICAN BIRDS THAT ONCE WERE. AS IS WELL KNOWN, IT CAN SURVIVE ONLY ON THE PLAINS OF CERTAIN PARTS OF THE WEST, WHERE THE SAGE-BRUSH OR ARTEMESIA FLOURISHES, AND IT IS GREGARIOUS

in Wyoming many years ago I collected a number of the chicks and preserved their skeletons.

Dr. Forbush tells us that "the Sage Grouse seldom is to be found far from the sage brush. Where this grows high along the river bottoms the birds often lie closely and they match their environment in color; so that the hunter may walk into the midst of a brood without seeing them, and they may rise on all sides. They labor into the air with noisy wings, but fly fast when well under way. Where they have been much hunted, they are likely to rise beyond gunshot and start for the horizon."

As is well known, these fowls subsist largely on the buds of the *Artemesia*, or sage-brush, a diet that causes their flesh shortly after being killed to become very rank and hardly fit for food.

In heavy storms on the plains, the young of this species, and sometimes the pullets, are killed with the hailstones that fall, which are not infrequently of a size big enough to knock a man down, should he be struck in the head by one. On a few occasions I have personally witnessed this, and in one big storm of the sort, on the Custer battlefield,

in the summer of 1877, when I was serving with the 5th U. S. Cavalry, I not only saw men knocked down, but the horses stampeded and tentage and wagons heavily damaged.

There are many specimens of mounted ptarmigans in

this exhibit collection of the United States National Museum displaying the various phases of their plumage, all the way from the pure white one to such examples of them as where it becomes mottled or mixed in the summer time.

A good example of a ptarmigan in the white or winter phase of plumage is here shown in Fig. 10, which is a Rock Ptarmigan, collected at St. Paul, Kadiak Island, by Mr. W. J. Fisher, on the 12th of April, 1882, Fig. 9 being a specimen of Welch's Ptarmigan (*Lagopus welchi*), adult, collected in Newfoundland by Rev. M. Harvey (no date). I am indebted to Dr. Charles

W. Richmond, Associate Curator of the Division of Birds of the United States National Museum for his kindness in verifying the numbers and other data for the specimens used in this article—a matter so essential to historical accuracy—and for the correct naming of the species represented.



FIG. 9—A SPECIMEN OF WELCH'S PTARMIGAN GIVING AN EXCELLENT IDEA OF THE APPEARANCE OF ONE OF THE SPECIES OF THIS GENUS IN SUMMER PLUMAGE. THEY LAY FROM 6 TO 16 EGGS, WHICH, AS A RULE, ARE HEAVILY MARKED WITH BLOTCHES AND LINES OF RICH BROWN

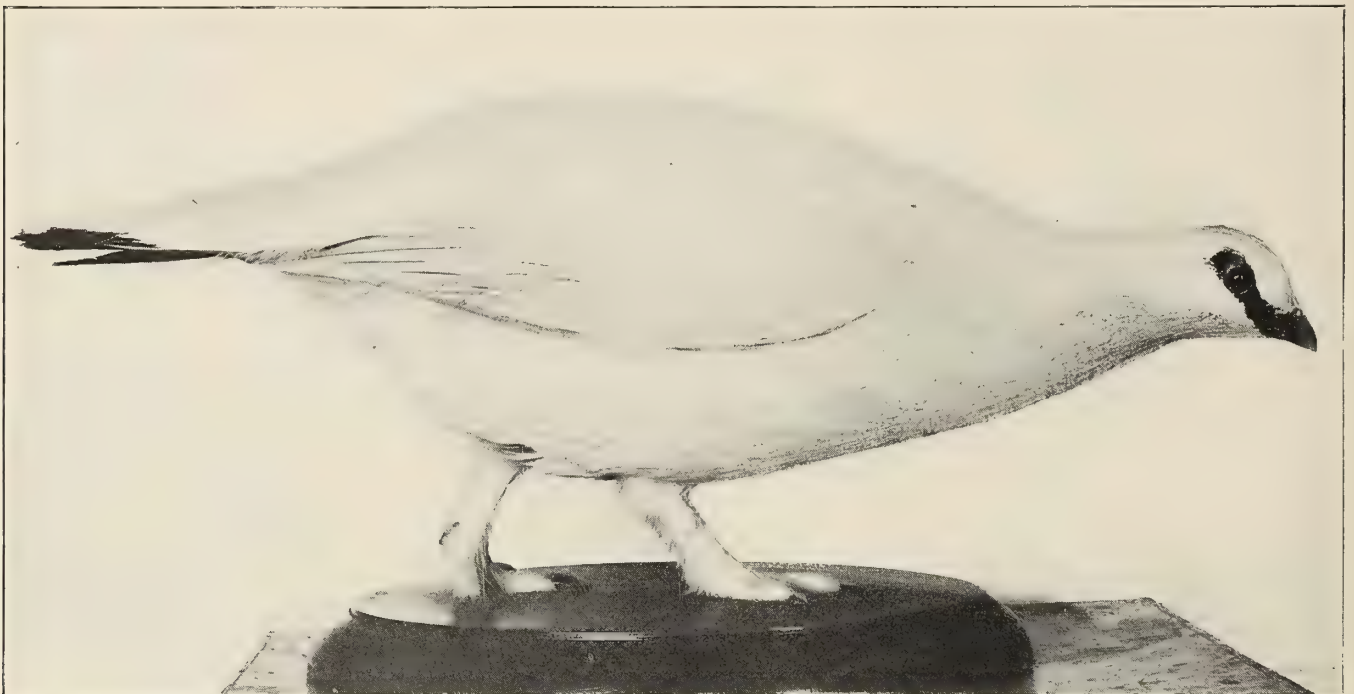
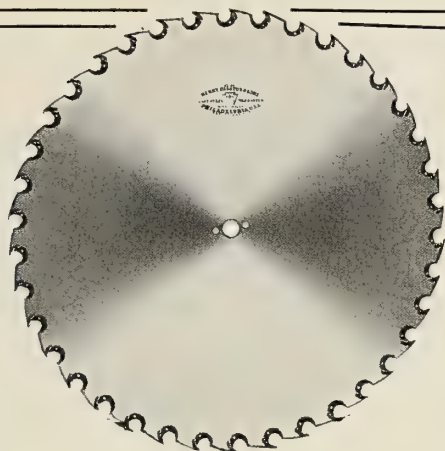


FIG. 10—PTARMIGAN STAND AMONG OUR SMALLEST GROUSE; THEY ARE BIRDS OF HIGH NORTHERN AND MOUNTAINOUS REGIONS OF NORTH AMERICA AND SIMILAR AREAS IN THE OLD WORLD. WE HAVE SEVERAL SPECIES OF THEM, AND THEY ARE NOTED FOR ASSUMING A PLUMAGE ENTIRELY OR, IN SOME FORMS, ALMOST ENTIRELY OF WHITE IN THE WINTER TIME. IN SUMMER IT IS DIFFERENT, BEING A MOTTLED PLUMAGE OF RICH CHESTNUT, RUFUS, BLACK, AND VARIOUS SHADES OF BROWN. WHERE BARRED, THE PLUMAGE IS BLACK



You will want to know more about this new Disston Inserted Tooth Saw

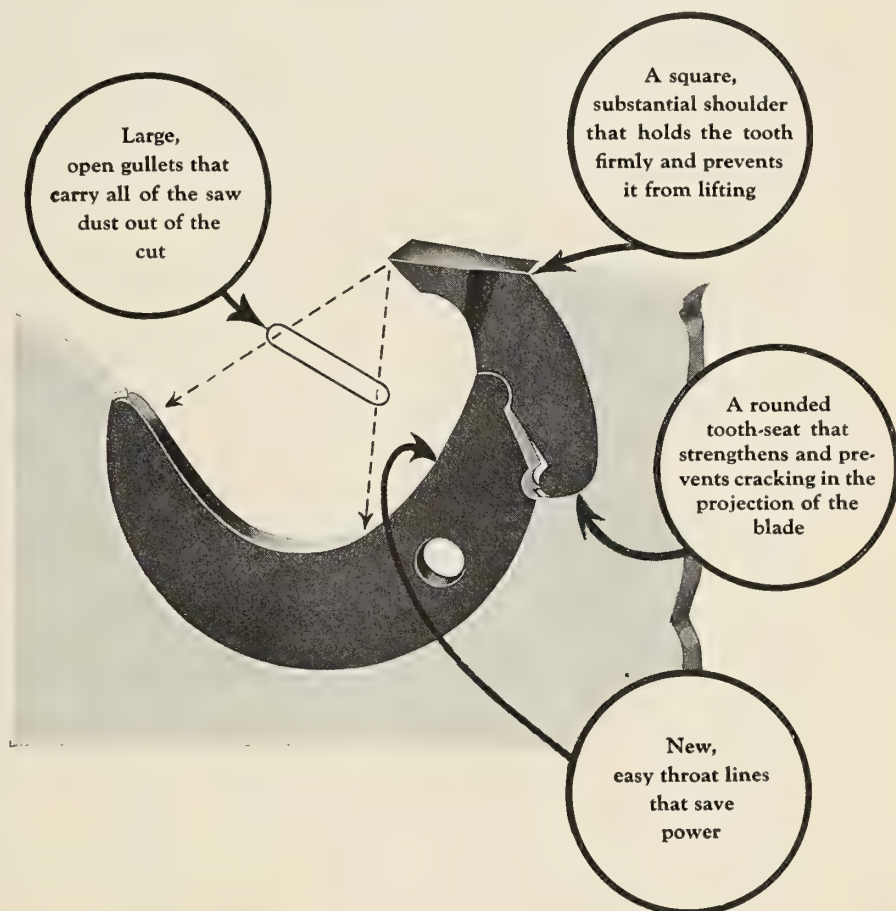
Some of the Features That Make the Disston Invincible Saw the Best for Your Use

In the new Disston Invincible Saw, the specially shaped gullets are so made that the sawdust is easily discharged by centrifugal force and cannot become wedged in the gullet and carried back into the cut.

The patented design of the Invincible Saw is such that the tooth is tightly locked in the blade. A tooth that becomes loose will cause the saw to be out of round, often break points or projections or cause loss of holders—these troubles are eliminated in the new Invincible Saw.

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PHILADELPHIA, U. S. A.

My First Cabin in the Hills

[Continued from page 612]

seen blossoms more beautiful. There were wild flowers in abundance, from the delicately tinted orchid to the flaming Indian paint brush.

Once or twice a month there was a trip to the post-office and store. The mail was an event, and magazines, papers, and letters were all prized possessions. Sometimes there was a trip to the look-out station or to some remote corner of the district.

One trip stands out above all others. For a few weeks that summer the mosquitoes were a veritable pest, and they became so bad that many of us wore a head-dress of netting whenever we ventured out. Even in the house a smudge was kept burning. All conversation was interspersed by slapping noises, about one blow to every ten words. When the subject of the trip came up, one of the guards said that he knew for a fact that there were no mosquitoes around that place. Several others corroborated his statements. We could not start any too soon to suit me, although it meant two days of riding, and not even the loss of our bacon the first night nor the fording of a river the second day dampened my ardor.

We arrived at this mosquito-less Mecca the evening of the second day and made camp. It was true, I saw not a single mosquito. I looked forward to a night of peaceful rest. Not long after I had rolled up in my blankets I felt a peculiar burning sensation on my face, but decided it must be sunburn. Shortly the burning was on my arm, in my neck, and some one said, "No-see-ems are about." "No-see-ems" it was. About forty of those little creatures can sit on the point of a pin without being in the least bit crowded, but they carry an elephant-sized bite. After a sleepless night I emerged, looking as though I had a bad case of measles. And I left that camp with a tender and affectionate regard for the honest, buzzing mosquito.

One day when I was alone I mustered up courage to ride down the trail and visit my next-door neighbor, nine miles away. I still regarded my horse with a sort of distant fondness, and I was never quite sure which side one must stand for mounting. It seems that western horses have a very peculiar etiquette regarding this. To settle all question, I tied a piece of ribbon to the stirrup in which I must first put my foot. About half way down the trail was a spring of cool water, and here I dismounted and took a little drink, keeping one eye on the horse to see that he didn't wander too far or turn about too many times. As I stood there, I felt the nearness of some creature, and the thicket near me moved. Without further information, I knew that the bear I had heard lived near the spring was hiding there. I bolted up the path, snatched the reins, and was about to mount when I remembered that one didn't just jump on a horse in a promiscuous fashion. There was something about, when looking a horse in the eye, get on either his right or left side; but which side it was had completely gone from my knowledge. Time was limited, too. If I chose wrongly I might be bucked off, which was an experience I didn't exactly long for; or, if I waited too long, the bear might

prefer me to the nice, juicy berry diet he might so easily have enjoyed. Suddenly doubt faded; I had spied my life-saving ribbon dangling from the stirrup. I jumped on the bewildered horse and sent him flying down the trail. Some unkind people have rather doubted that there was a bear there at all, but I knew.

A few weeks later the Sabbath quiet was broken by a cry from one of the boys, and he came running toward the cabin, shouting that a bear was hiding in the thicket. My husband snatched his gun and the race began. Ahead jumped the red-haired guard, gesticulating wildly. After him came the gun-bearer, then the man with the kodak, and the more conservative members brought up the rear. And when the trophy was finally landed five men came back bringing a poor little, despairing-looking bear, which I am sure must have been glad to have been boosted over into his happy hunting ground.

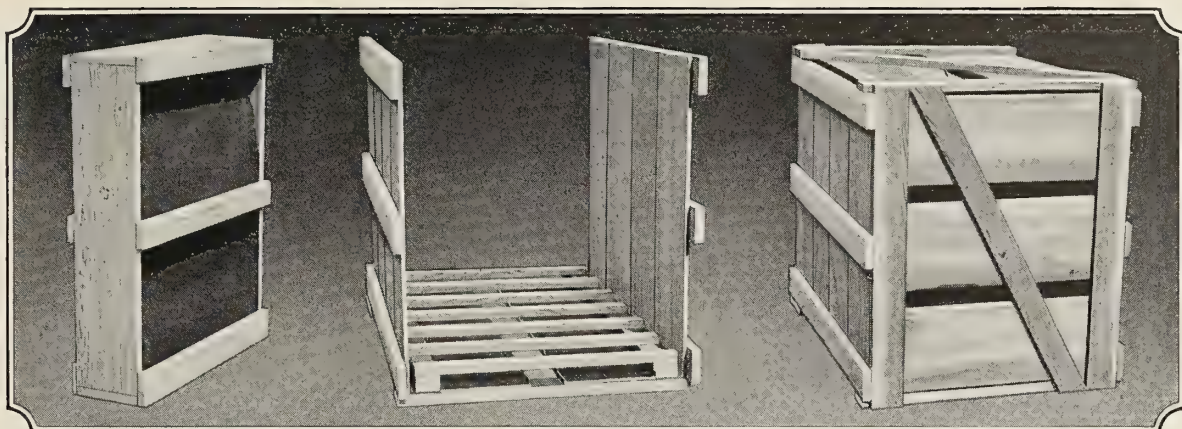
And so the summer went. We saw people once in a while—fishing parties, trappers, and forest officers. There was time to study, read, sew, write letters, or just to sit and listen and breathe the good smell of things, and to become acquainted with the peace that always comes with the stillness of the hills. One could hear wild tales of Paul Bunyan and his ox, Babe, and of all the marvelous things that happened in the winter of the Blue Snow. It is quite true that exchanging Paul Bunyan stories doesn't give one quite the same thrill that one might get exchanging juicy bits with one's next-door neighbor over the back-yard fence, but I assure you that there is more than a bit of a kick in some of old Paul's doings. And then, too, out in the hills, away from all people, one gets to class all experiences as novel and interesting, from a toothache on down.

Since that first summer, several others have passed. Although we still live where we can hear the coyote talk back to us in the winter time, the road has taken the place of the trail, and in my case the automobile has superseded the horse. There are still problems to be solved, perhaps more each year, for as long as the forest ranger lives away from settlements there will be no social life, school facilities will always be poor, and living quarters too often cramped. The wife of the ranger may well ask if the odds are worth the price she must pay.

Over that corner of our sunny kitchen which we call our dining-room hangs a framed poem of Van Dyke's. He tells of the things of deepest worth:

Shelter of the forests, comfort of the grass,
Shadow of clouds that swiftly pass,
Music of birds, murmur of little rills,
And after showers the smell of flowers,
And of the good brown earth.

All of these things can the wife of a forest ranger have in goodly measure; and thus, perhaps, it was that our pioneering ancestors were recompensed. And as long as good men and true will persist in becoming forest rangers, just so long will women be contented to live in ranger stations "far from the madding crowd," on the National Forests.



The illustration on the left shows the original crate used by a manufacturer of motor truck radiators. It contains one radiator and exposes contents to damage in shipment. After studying this manufacturer's problem, Weyerhaeuser Crating Engineers designed a crate to take six radiators.

The middle picture shows the bottom rack for nesting radiators and the bottom and sides of the new crate. The picture on the right shows the new crate ready for shipment. Note the improvement in protection given to contents. The savings effected by this new crate are explained below.

Scientific Crating Means More Than the Designing of a Single Crate

MANY manufacturers still look upon the packing of their goods as a minor incident of their business. They haven't investigated the far-reaching results of better packing.

When manufacturers in many lines of industry, with the cooperation of Weyerhaeuser Crating Engineers, can effect savings that amount to thousands of dollars a year, it is worth the time of any busy executive to check up on his own packing methods.

The work of Weyerhaeuser Crating Engineers doesn't consist in merely substituting one crate for another. They apply their scientific principles and practical experience to a manufacturer's shipping problems. Quite frequently they revolutionize a concern's packing practices.

TAKE the case of the motor truck radiator illustrated above. This concern was packing one radiator in a crate and having trouble with shipments damaged in transit. The Weyerhaeuser Engineers worked out a crate that carries six radiators and that gives ample protection to the contents.

The results of applying scientific packing to this problem were:

- A better crate in every respect.
- A saving of 43% of lumber, per radiator.

- A saving of 17% in shipping weight, per radiator.
- A considerable saving in labor.
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For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of crating lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser Engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 2694 University Ave., St. Paul, and with representatives throughout the country.



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AUTUMN LEAVES

I watch the swirling leaves,
Blown hither and yon
By ever-changing winds;
Inconstant in their company
And powerless to steer their separate ways,
Until at last, with no intent of theirs,
They meet a common barrier—
Some dark and lonely vale
Or stark, relentless wall—
And are at rest.

So do I see ourselves whirled on
Before the adverse winds of destiny;
So are we flung across each other's paths,
Meeting and parting with strange company,
Having no power to keep to our own ways,
Inconstant, ineffectual,
Until we, too, confront the last great barrier
And are at rest.

—*Florence Polk Holding.*

A WORTHY EXAMPLE

The 30-mile boulevard leading from the imperial summer palace at Nikko, Japan, to a near-by village, with stately Japanese cedar trees planted on both sides, towering 200 feet or more in the air, makes a deep impression on the visitor. The legend connected with these trees has more than a passing interest. Several hundred years ago, it is said, the Emperor of Japan summoned all the noblemen of the country to his summer palace, each one being requested to bring a gift. An impoverished nobleman, realizing that he could not make an adequate offering in gold or silver, carried with him a sack of tree seeds and, planting the seeds on both sides of the highway, made the remark that his gift would be the greatest blessing of them all and that his name would be remembered long after the gold and silver offerings of his colleagues had vanished.

Today, many hundred years after these seeds were planted, thousands of persons are being benefited by these shade trees, and the seeds from these cedar trees have caused new trees to grow up in the neighborhood, which in turn have provided many generations with material for the construction of homes.

Will not some public-spirited lumbermen, who have made their fortunes from our forests, follow the example of the Japanese nobleman, thereby bestowing a blessing on posterity?

CALIFORNIA'S BLUEBIRDS

California has two bluebirds. The western bluebird, with almost ultra-marine blue plumage, is usually seen in the lower foothills or in the valleys in winter. The other bluebird, less generally seen, is the Mountain or Arctic bluebird, whose plumage is a wonderful light blue, never to be forgotten after it is once seen. It might be supposed that such brilliant colors would mark bluebirds for early extinction. As a matter of fact,

their colors are really protective. Flying against the sky, a flock of bluebirds, even quite near at hand, are often almost lost with their blue against the blue of the sky. The Arctic bluebird nests in the high mountain uplands. It is to be seen in the Tuolumne meadows in the late summer.

WILL ORGANIZE RESEARCH COUNCIL

The Forest Service is organizing a research council in the Lake States. This council will consist of representatives of the state departments of forestry, forest schools, agricultural colleges, as well as representatives of the lumber, pulp and paper, furniture, and wood-using industries in the Lake States region.

It is planned to have the council act in an advisory capacity for the new Lake States Experiment Station in suggesting problems that stand in need of solution and in suggesting localities where studies should be made. It will also act as a clearing house for all forest investigations that may be conducted in the region, so that if a particular problem is already being studied at a forest school or by some state forest department, no attempt will be made to duplicate that study. On the contrary, such studies by the existing agencies will be encouraged and the time and resources of the Federal Experiment Station devoted to other problems.

Reforestation in the upper peninsula and the northern part of the lower peninsula of Michigan will be the first problem to receive the attention of the experiment station.

AIRPLANE FISHERMEN

They used to come in schooners, and then they came in cars, but now they come in airplanes, like fishermen from Mars. Local residents along the upper reaches of the Gila River, according to the Gila Forest Bulletin, were quite surprised recently to see three huge planes come settling to earth to unload fishing parties. What is the use of building fine trails to trout streams if people are going to ignore them and come gliding in by air?

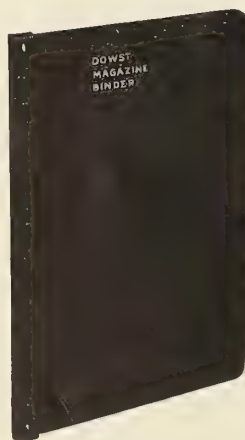
REFORESTATION FROM THE AIR

The Hawaiian Forest Service has demonstrated that tree seeds can be successfully sown from the air. In a recent experiment carried out by the Army Air Service in cooperation with the Department of Agriculture, fig-tree seeds for watershed protection were scattered over several rough sections of barren country that are almost inaccessible by other methods. Two planes were used, and it is said that as much territory was covered in three hours as could have been seeded in months in the usual way. Climate and moisture conditions in the island probably insure a high percentage of germination if the sowing occurs at a favorable time.

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RED PINE TREE PLANTED BY BOY SCOUTS IN MEMORY OF WARREN G. HARDING

On the day of mourning for the late President of the United States, all Scouts in the many camps located in the Kanohwahke Lakes region, Palisades Interstate Park, New York, stood at attention during a salute of 21 guns and the sounding of taps.

At each camp a tree was then planted in memory of the President. The picture shows the dedication of the tree set by Scouts studying forestry at the newly established



SCOUTS FROM THE ROCK OAK
FORESTRY CAMP PLANTING
THE MEMORIAL TREE

camp located on Spruce Pond, near Tuxedo, New York.

Among those present were Park Commissioners Hopkins and Sutro, B. T. B. Hyde, Supervising Director of the Forestry Camp, and representatives from the younger boys' camps, in addition to the members of the Rock Oak Camp.

Commissioner Hopkins, after introduction by "Uncle Bennie" Hyde, gave an impressive address befitting the occasion. Following this Chief Gordon, Director of all the Scout Camps, addressed the Scouts.

ANOTHER SCHOOL OF FORESTRY FOR THE SOUTH

A Department of Forestry is being organized at the Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma. The head of the department is Christian Jensen, who has been attached to the college as forester for several years.

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ADIRONDACKS

"Adirondacks" is an Indian word meaning "wood-eaters," and was a term applied in derision to a defeated Indian tribe, driven to the mountains by the Iroquois and forced to live there on bark and berries.

BOOK REVIEWS

NATURE IN AMERICAN LITERATURE—Norman Foerster. (Macmillan) New York, \$1.75.

Turning the lantern of research on the work of nine of our best known and loved American poets and prose writers, the author has brought to light many interesting and delightful evidences of their individual and particular love of nature. The poets are Bryant, Whittier, Lowell, Whitman, and Lanier, and the prose writers are Emerson, Thoreau, John Muir, and John Burroughs. The author not only analyses their poems and essays which touch on nature, but includes as well keen discussion of the character and philosophy of each. It is a book which will bring happy hours to lovers of American literature.

SNOW AND ICE SPORTS—Elon Jessup. (E. P. Dutton) New York, \$3.50.

This is a winter manual, delightfully written by an authority in his field—an interesting, practical treatment of all kinds of winter sports for all kinds of people—men and women, young and old. What to wear and how and when to wear it, a description of the various sports in vogue when ice and snow claim the world, and the necessary and proper equipment for participation in this invigorating exercise, with lots of good data on mountain climbing, etc., combine to make a most interesting and valuable contribution to the winter literature.

GAME CENSUS

The game census of the National Forests in District 4 shows some interesting facts: All forests have deer on them, the Kaibab the most, the Caribou the fewest.

Elk are next most widely distributed, being found on twenty-one forests; most on the Teton, fewest on the Lemhi.

Mountain sheep are scarce, but widely distributed, being found on seventeen forests. The Teton leads in numbers, the Boise is the tail-end.

With mountain goats it is different. They are found on only seven forests, and the Boise leads, with the Payette at the foot of the list.

Moose are found on five forests, the Teton having the most, the Salmon the fewest.

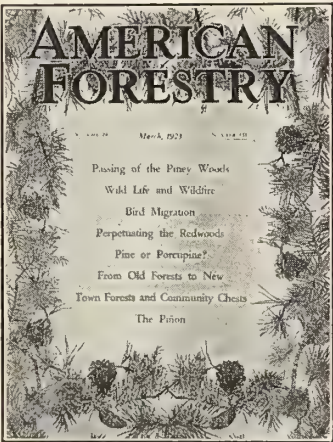
Antelope also are found on five forests, the Lemhi leading and the Minidoka bringing up the rear.

LO, THE TIMBER POOR INDIAN

He may be a factor in the lumber situation. According to the *American Lumberman*, three hundred thousand Indians in the United States own thirty-five billion feet of merchantable timber, valued at one hundred million dollars. The Indians own altogether 7,000,000 acres of commercial forests, in addition to large adjacent areas of woodland. The young growth and the lands they stand on represent about a thirty-million-dollar value. If the forest wealth were divided equally, every Indian in the country would have \$430 of forest wealth.

Membership in The American Forestry Association is open to any person interested in the perpetuation of our forests.

PLANT TREES
PROTECT FORESTS
USE FORESTS



This is the only Popular National Magazine devoted to trees and forests and the use of wood.

October, 1923.

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A CONCEALED FIRE

Mr. R. W. Ayres writes of a most remarkable incident which was called to his attention by one of the loggers of the Fruit Growers' Supply Company, and which he at once personally investigated. On June 25, 1923, a 110-foot broken-top white fir tree was felled, which appeared to have been fire-killed, as it was standing in a burnt-over area. When it fell, there was a solid butt log 20 feet long and about 5 feet in diameter, and above that the whole tree simply split into strips. Upon investigation it was found that the 90-foot upper section of the tree was nothing but a hollow cylinder with walls about 4 inches thick, and that the heart had been entirely consumed by fire, which was still burning at the bottom of this natural chimney. There were no lightning scars and no sign of rot, and the tree stood at least 600 feet from any road or railroad. The only solution of the mystery, therefore, seemed to be that at the time this area was burned over, September 3, 1922, fire had lodged in the broken top and had slowly eaten its way downward, taking nearly ten months to consume the 90-foot column. Shortly after observing this phenomenon Mr. Ayres heard of a similar occurrence, and has come to the conclusion that this may explain some of the unaccountable fires that have puzzled woodsmen in the past. A tree burned in this manner could easily be blown down by a high wind, and thus set fire to the surrounding forest.—*The Review*.

SERVICE SELLS CALIFORNIA
TIMBER

One hundred and sixty-seven million feet of timber has recently been sold on the Plumas National Forest, California, according to an announcement just made by the Forest Service, United States Department of Agriculture. The timber covers about 14,000 acres in what is known as the sugar pine-yellow pine belt in the heart of the Sierra Mountains of California.

It is estimated that this amount of timber, together with the intermixed privately owned timber, will require eight years to cut and convert into lumber. Twenty-one miles of railroad will be built to connect with an existing logging railroad 40 miles in length. As usual in this type of forest, the logging will be done by donkey engines, but Forest Service men will carefully supervise the cutting so that all young and thrifty trees will be left for future growth. Only marked trees will be cut and brush and debris resulting from logging will be piled and burned.

This large body of timber was sold to the Swayne Lumber Company, an established concern in the locality, which is now logging on private lands in the same watershed. The United States Treasury will be enriched approximately \$360,000 at the rate

of about \$45,000 a year. Prices received were \$3.50 per thousand feet for sugar pine, \$3 for yellow pine, and \$1 for other species.

HISTORIC FOREST FIRES

"The moving finger writes and, having writ, moves on"—from 1871 to 1922, a scorching record of forest destruction by fire.

In 1871 the Peshtigo fire in Wisconsin burned 1,200,000 acres of timber and cost 1,500 lives.

The Michigan fire burned 2,000,000 acres of timber and cost an unknown number of lives.

1881—Another Michigan fire burned 1,000,000 acres and cost 138 lives.

1894—In spring the Phillips, Wisconsin, fire cost 300 lives.

1894—In the fall the Hinckley, Minnesota, fire ran over millions of acres in Minnesota and Wisconsin and devastated the towns of Hinckley, Sandstone, Perley, Barronett, Clayton, Shell Lake, Cumberland, and Granite Lake and cost 400 lives.

1908—Metz, Michigan, and Chisholm, Minnesota, fires occurred.

1910—Northern Minnesota burned and over 100 lives were lost.

1910—Idaho and western Montana fires.

1912—Another big Michigan fire.

1918—The terrible Cloquet, Minnesota, fire costing over 400 lives and some \$30,000,000.

1919—Disastrous fires in northern Rocky Mountains.

1922—Millions of dollars' worth of privately owned timber and logging equipment destroyed in Washington and Idaho.

The question is, Shall it *continue* to write in shameful, flaming figures this record of irrevocable loss to our people?



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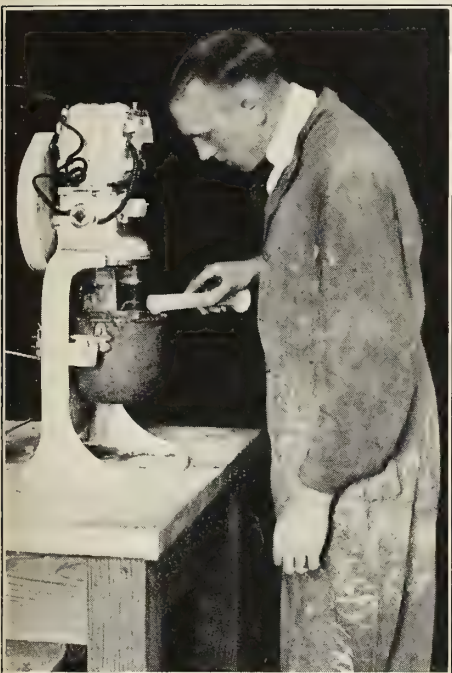
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"A GOOD DEED IN A NAUGHTY WORLD"

One of the finest groves of redwoods on the highway between Eureka and Crescent has been deeded to the state by Mrs. Zipporah Russ, of Ferndale, as a memorial to her husband, Joseph Russ, who was a pioneer of Humboldt County. This highway passes through the most magnificent and largest stands of redwoods in the state, and the lovers of trees are seeking to save what amounts to only a narrow strip along this road; but sentiment is forgotten when the almighty dollar beckons, and some of the stateliest trees are already falling before the logger's ax.

PRESIDENT COOLIDGE AS A TREE SURGEON

President Coolidge left one task unfinished when he moved to Washington. While sitting in a hammock on the front porch of his old homestead at Plymouth Notch, a few days before he became the President of the United States, he noticed that dry rot was destroying one of the great maples that surrounded his father's home. For a few moments he studied the disease that was threatening the beautiful tree. Then he decided to attack the rot, and, turning tree surgeon, the next day he dug it out. He had planned to fill the wound with cement the next day, but he packed his bag and left the task to his father, casting a final glance at the maple before leaving the farm that has been the home of the Coolidges for three generations.

FAVORITE LAKE FOR BIRDS SAVED TO MINNESOTA

Swan Lake, a valuable and unusual body of water about 10,500 acres in area, located in Nicollet County, Minnesota, has been saved to the state through the efforts of the state game and fish commissioners, the Biological Survey of the United States Department of Agriculture, and land-owners and local conservationists of the region. A movement to lower the level of the lake four feet, eventually draining it entirely, was successfully opposed and defeated at two hearings, after an examination of the wild-fowl and food-plant value of the lake had been made by three representatives of the Biological Survey.

In deciding this case the district court in Minnesota laid emphasis on the great importance to the public welfare of such bodies of water as Swan Lake.

PENN STATE DISCONTINUES COURSE

Professional forestry will not be taught at the Pennsylvania State College. The trustees have decided to discontinue the course, and the subject hereafter will be taught at the Pennsylvania State Forestry School at Mont Alto.

The Destruction of Waterfowl in the West

[Continued from page 597]

ducks and all wild fowl should not be allowed to congest in large numbers on shallow bodies of fresh water. In the very old days, probably falcons and eagles kept them in movement; later, hunting effected a similar salutary condition. At present the utmost care should be exercised, when establishing sanctuaries for wild fowl, that only such as have ample depth of water for resting purposes should be selected.

Nothing of this must be construed as any plea for the reestablishment of spring shooting, but the present calamitous conditions call for some remedy, however drastic. Nothing can be worse than the apparent apathy with which the present menace seems to be generally regarded.

[Photographs by courtesy of the United States Biological Survey.]

PLATFORM OF YOUNG ASSOCIATION

The Humboldt Redwood Reforestation Association of Humboldt County, California, has elected the following officers for the year: President, W. W. Peed, of the Hammond Lumber Company; Vice-President, H. E. Crawford, of the Pacific Lumber Company, and Secretary and Treasurer, E. S. Murray, of Dolbeer & Carson Lumber Company.

The objects of this association, organized in April, 1923, cover a broad field and include intensive investigation of the motivating factors in reforestation and conservation; co-operative protection work on cut-over lands; fire prevention and land classification; national and state co-operation in reforestation and redwood preservation, and supervision of the reforestation work undertaken by individual members of the association.

SPRUCE BUD WORM THREAT IN THE WEST

T. E. Snyder, of the United States Bureau of Entomology, has called attention to the possibility of serious damage resulting to the coniferous forests of the West as the result of the work of the spruce bud worm. He calls attention to the fact that the Bureau has recently investigated a series of defoliations by the spruce bud worm in northern and western Idaho, in the Yosemite National Park, and in the Tower Falls and Camp Roosevelt section of Wyoming. This destructive insect, which he says has devastated the spruce, balsam, and fir forests of Quebec, Ontario, New Brunswick, and Maine, is apparently distributed through the western states. He advises that a close watch be kept for defoliation of fir, spruce, and other coniferous trees, as it is his opinion that damage often attributed to other defoliating insects may be due to the spruce bud worm.

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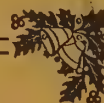
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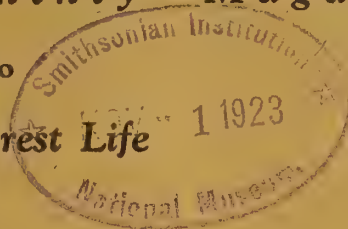
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AMERICAN FORESTRY

An Illustrated Monthly Magazine

Devoted to

Forests and Forest Life



VOLUME 29

November, 1923

NUMBER 359

War Eagle's War

The Tamed Wild Apache

Saving Forests By Saving Paper

The Rangers' Trail

Fighting the Pine Beetle

The Mountain of 20,000 Deer

City Planting

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNAL FORESTS.

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social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

NOVEMBER, 1923

No. 359

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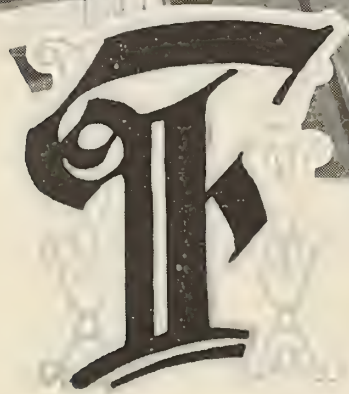
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VOL. 29

NOVEMBER, 1923

No. 359

War Eagle's War

*A Story of Mountain Men and How a Range Battle Was Won,
as Told by a Forest Ranger in the Glow of the Camp Fire*

BY JULIAN E. ROTHERY

RANGER BARR threw another log on our camp fire and sprawled his length in its genial glow.

"Range war?" he said in answer to my question. "You bet we had one! This National Forest was the original battlefield of Idaho! Not since the fight at 'Frisco Bar, forty years ago, has any ructions broken out in this Upper Country leastwise comparable to our first and last range war, when the prospectors of War Eagle fought the Applegate outfit, and our Supervisor trimmed them both.

"But before I tell about this here range war you ought to understand something about sheep-herders, prospectors, and supervisors. These ewe-wranglers were mostly a desperate bunch, that delighted in sheeping off some poor homesteader's cow pasture and burning his fence for firewood. We have got 'em pretty well civilized now, but they still need to be toned down now and then. The War Eagle prospectors, six old-timers left over from the gold days, were just the kind of hombres that don't relish being trod on. Graham, the Forest Supervisor, was a young lad from back East, whose job was to promote the general welfare and attain domestic tranquillity, which you can

see is some contract when the different brands of critters before mentioned gets mixed and fractious. Stir into this now the Thunder Mountain Kid, Nez Perce Polly, Joe Applegate and his son, Good Eye Galloway, their sheep-herder, and yours truly, all as supporting columns, *casus belli*, and general staff, and you have the elements of a real range war.

"It all started because the range was overcrowded, and, to protect it from being plumb tramped to dust, Graham, the Supervisor, decided to run Applegate's sheep in the War Eagle country, where there had never been any before. Now, I have got to explain about the old prospectors up there and the Thunder Mountain Kid. Just the winter before, that



ABOUT HALF A MILE THIS SIDE THE WAR EAGLE BRIDGE, I RODE UP TO TAKE A LOOK. THE TRAIL WINDS AROUND THE NEAR BANK, WHERE I WAS, OUT IN THE OPEN, AMONG THE ROCKS; THEN TURNS SHARP ACROSS THAT OLD TIMBER BRIDGE AND CLIMBS UP THROUGH THE PINES

same Kid had arrived to find itself without parents that anybody knows of. You've heard how Carl Steinman saved the baby's life by packing a case of condensed milk over to it that Christmas—a hundred and sixty miles on snow-shoes. Well, all the boys in the Upper Country sort of adopted it; and now, while Carl was off mining, the six gray-headed prospectors in War Eagle had assumed the family cares and hired Nez Perce Polly, a knowing, old Injun squaw, to ride herd on the infant. Polly, she'd nursed whatever was sick in these hills for the last fifty years, little and big, white, red, or yellow. Her heart was in the right place.

"She and the kid took the best cabin in camp, displacing Missouri Mike and Salmon River Sam. China Bob was washerman and the others worked different shifts for the kid. They had a milch cow they fetched clear up from the Elkhorn Ranch, and they took turns milking, all except Palsied Ned, who shook so he couldn't hit the pail!

"Well, when the report came that the Supervisor was going to let sheep run in the War Eagle territory, these old-timers stood right up and bit holes in the air, they was so mad. They figgered it would spoil the cow range, pollute the stream, kill the Thunder Mountain Kid, and insult the memory of every dead prospector in Idaho. So they gets together and delegates Big Andy and Salmon River Sam to proceed to Pine Valley and lodge a vigorous remonstrance with the Supervisor.

"I was in the office making up my reports when they blew in. The Supervisor was hunched over his desk, juggling figures, but looking like he wanted to get out into the hills again. Big Andy—tall, with a long, white beard and a drawly voice—he was the orator;—and Salmon River Sam—short, fiery, vociferous, but a kindly old cuss just the same—he jammed in on the side. There they stood, covered with dust and guns, rubbering at the Stars and Stripes hangin' over the Supervisor's desk. Then, as Graham looks up, Sam breaks out by way of introduction:

"I hate sheep! I loath mutton! I never wear wool!"

"Graham is plumb flabbergasted; he'd never seen either of them before.

" 'Sit down, gentlemen,' he says, tryin' to get his bearings.

"But Salmon River Sam bellows: 'They kill the range, poison the streams, and blat like the devil.'

" 'Mr. Supervisor,' says Big Andy, officious-like, 'this is Salmon River Sam, chief guardian of the Thunder Mountain Kid in the absence of Carl Steinman. We represent

the entire vote of War Eagle and we have willingly rid this seventy-five miles in here to register a protest with you before appealing to Washington!'

"Big Andy then explains all about the Thunder Mountain Kid, the lone cow, Nez Perce Polly, and ends up by demanding that sheep be kept out of the War Eagle district.

"The Supervisor gets out a

map and shows them there is over three hundred square miles in the War Eagle district and only twelve hundred sheep to range there, and promises to keep 'em four miles from the camp and save all the meadows for cow pasture; but they won't hear to it.

" 'A sheep-herder would graze the grass off'en his grandmother's grave with pasture rotting alongside, they are that mean,' belches Salmon River Sam. 'They ain't humans. I built the trails and killed the snakes to make this a white man's land before a blatting ewe ever crossed the plains; and now see how the Government treats its free-born citizens!'

" 'Mr. Supervisor,' breaks in Big Andy, 'we are a peace-loving camp. In times past we have made and enforced our simple laws with charity and justice to all. I was myself a member of the Vigilantes Committee, as constituted in '62, and seven men at one time, who got a mite keerless with our city ordinances, have I seen hanging by their necks from that big yellow pine there by the War Eagle Bridge. This I merely cites to show our ardent desire for peace and our determination to keep this a white man's land. Accordingly, we hereby deliver an ultimatum, that War Eagle is mobilized and in battle array to resist, by arms, intrusion upon our unalienable rights!



THE LAST OF THE HUNDRED THOUSAND SHEEP HAD BEEN TALLIED THROUGH THE PINE CREEK CORRAL, AND TOMORROW THE FINAL BAND WOULD START FOR ITS SUMMER RANGE, FAR BACK IN THE HILLS

"'You look like a decent cuss yourself, Mr. Supervisor, even though I did hear you was *ex libris*; but to run sheep in War Eagle, you oughter be a Brigadier General. I fought the battle of 'Frisco Bar, I did, and Old Man Kelly followed Sherman to the sea, but the first ding-blasted ewe that crosses the bridge starts a war that will make either of said military episodes look like a Sunday-school picnic!"

"Solemn they files out of the office and we sit there silent as sully owls.

"'What was that, Mr. Graham, Big Andy called you?' I asks at last.

"'Oh,' says he, '*ex libris*!"

"'What's an *ex libris*? Don't sound altogether complimentary.'

"'Well,' he replies, 'it's Latin and, rather freely translated, it means, before you bet your money on a horse see what odds the book-makers are offering.'

"'Hump,' I grunts, 'I pass, but I'll bet you a fiver you don't run no sheep in War Eagle this summer.'

"'Done,' says he.

"'Here,' says I, 'is a gold boy with a hole in it, which makes up in luck what it loses in weight. You hold the stakes,' and I slips over the coin.

"'All right,' he says, 'and when the sheep cross the bridge it's mine.'

"'Maybe a couple of weeks after this, in blows Joe Applegate with a baleful gleam in his eye.

"'Look a here, Mr. Supervisor,' he shouts, 'I'm Joe Applegate! Born in America, and folks, too, both sides—clear back. I own my ranch, pay my taxes, keep the law, send the kids to school, and vote straight Republican. I've paid my grazing fees, and now I want to know if I can run my sheep on this National Forest, peaceably and legally, or not!"

"'It is part of my many jobs to see that you can and do,' says the Supervisor.

"'All right; sounds fair enough, but here I get a threatening letter from a gang of rascals up at War Eagle. They warn me to leave the country and say they plan violence if I cross the War Eagle Bridge. They sign themselves "The Vigilantes Committee as Constituted '62," per some Long-legged Andy and What-the-devil Sam.'

"'The Supervisor tries to explain how they are independent old pioneers, who staked out the land when it was the Northwest Territory, and then all about the Thunder



THE HARD WORK OF COUNTING, WHICH HAD OCCUPIED RANGER BARR FOR TWO WEEKS, WAS OVER. NOW THE QUIET OF THE TWILIGHT HOUR DREW ON, BROKEN ONLY BY THE FAINT TRUMPETING OF THE EWES, AS THEY CALLED TO THEIR STRAYED LAMBS

Mountain Kid and the cow and Polly. Allows how they was crabby and cantankerous, but fine men, who need a little humoring.

"Humor be damned," howls Applegate. 'I don't see no joke. All I want is my rights. I'm no gun-toter, but I'm willing to fight for what's coming to me! Good-Eye Galloway will help; so all you got to do is let the old knot-heads who think they own this Government Forest know I'm coming!'

"He marches out of the office and the Supervisor looks more lugubrious than I'd ever seen him.

"Talk about knot-heads,' he groans; 'I don't know which is worst, Applegate or the War Eagle bunch.'

"Hump,' I says, sorter casual; 'by the principles of *ex libris*, you ought to turn this little trick.'

"I'm going to War Eagle,' he says, not noticing my remarks. 'and do something desperate. Meanwhile you meet Applegate's sheep and herd 'em in slowly. Plan to get to the bridge about next Tuesday night; that gives me five days, enough to snap over something pretty crisp, if I do have to play a lone hand. Don't start anything till I give the word. Keep the sheep this side the bridge till you hear from me.'

"Entirely unneeded advice,' I replies. 'My grandfather was scalped by the Indians and my father was shot hunting outlaws, and my sole ambition to date has been to die in bed, peaceful—not by the sudden and startling roar of guns.'

"Summer may be late in coming to these Idaho hills, but it's sure worth waiting for. What if we do have ten or fifteen feet of snow in winter; it's just so much more water for the earth, come springtime! Suppose it is June before it melts; the sun's just so much the brighter. Then the new grass sweeps up the mountain sides, fresh and sweet. The flowers pop up all about—blue, white, yellow, and red. The quaking asps gallop out in their pale shimmery green and the old pines fetch up the rear of the procession—dark, glossy, fragrant. The wind blows clear and the sky burns blue. No wonder the lambs skip about and kick their heels for joy!

"That was just the sort of a day that Applegate's sheep trailed up from the desert, all hot and jaded and panting for the mountain range. Joe himself was along, reeking with rights and justice; also, he brought his son, a smart young colt of eighteen or thereabout, and Good-Eye Galloway. He was Irish and always pining for a set-to. One eye had been gouged out in some scrap, but it only made him more peevish and belligerent, thinking how sometimes he passed a fight on his blind side and never saw it.

"Joe starts in on me the minute he hits the corral here:

"How's the government of the pioneers, by the pioneers, for the pioneers this morning? What's happened to the broad U. S. A. anyhow?"

"See here,' says I, 'you act like your name ought to be Crabapple. Why don't you try being a man for

once? Might find you really liked it. The American flag floats over the grand State of Idaho today because the country was nailed down by pioneers just like those old lads up in War Eagle. This very trail was cut out by them, and one reason you're wearing your hair this fine June day is because they helped lick the Indians.

"Then he coughs up a second inaugural address about right and justice, and we starts up the trail toward War Eagle.

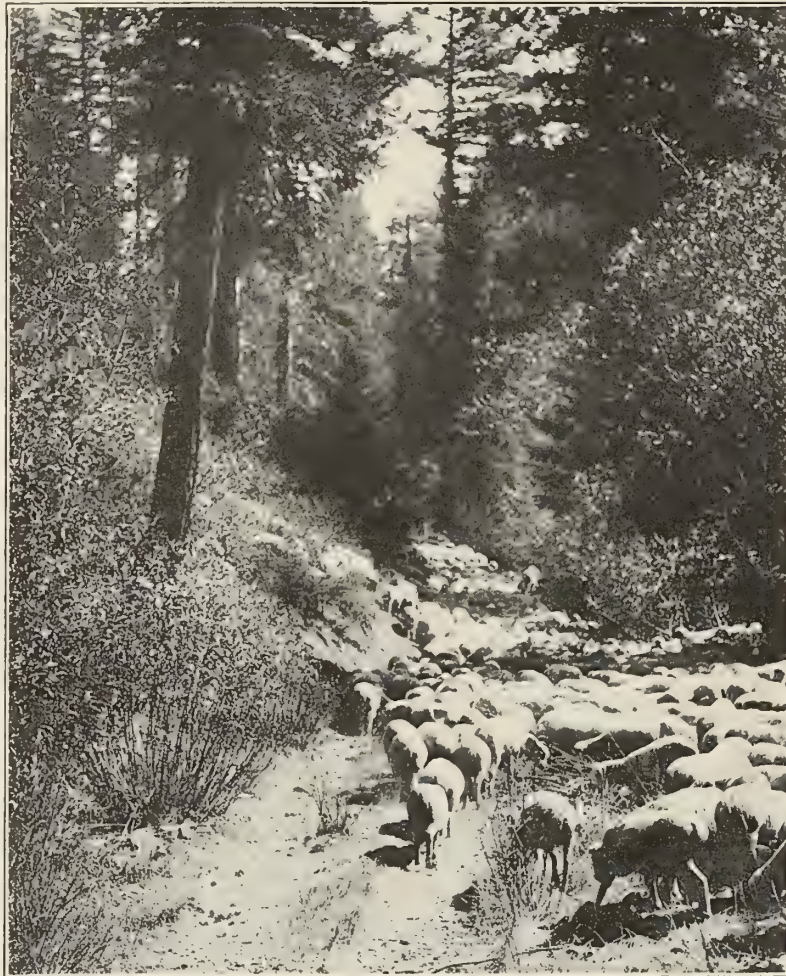
"I sure thanked the god of geography that the bridge was seventy-five miles away. Every day we made about fifteen miles and I got fifteen miles more apprehensive-like.

"I'd seen range wars before, over in Wyoming. They ain't pretty—a couple of

thousand dead sheep piled up in the bottom of some rocky canyon and a few corpses for exterior decoration. Good-Eye Galloway gets more martial and hoss style every minute, a-clashing his arms and yelling: 'Come on, ye haythen ground-gophering prospectors, and I whale the blue tar outen ye!'

"Applegate and the lad, they weren't breathing murder; that warn't their kind. They just sat back in the traces, stubborn as mules, and hacked about their rights.

"Along about 4 o'clock one afternoon we pulls into a



ALONG TRAILED THE SHEEP, BLATTING AND BAWLING AND SURGING TOWARD THE OLD BRIDGE

little meadow about half a mile this side the War Eagle Bridge, and I rode up there to take a look. Bald-headed old Beelzebub! I saw, all right!

"You know the trail winds around the near bank, where I was, out in the open, among the rocks; then turns sharp across that teetery old timber bridge and climbs up through the pines. Suffering saints! It would take an army to rush that bridge. I sees why Big Andy allowed the Supervisor ought to be brigadier general. I looks about for cover, but the only thing I sees handy is that old hangman's pine. I thought of the human cones it once grew and felt depressed.

"Just then comes a hail from the other bank, and, peeking through the timber, I spies lines and rows of breastworks, dugouts, trenches, gun emplacements, and the devil knows what. Then I notes the glint of guns, and Old Man Kelley bobs up his white head and hollers, 'Halt! Who's there?' and cocks an eye at me that naturally squinted from seventy years a-glancing down a rifle barrel.

"'Friend,' says I, pouncing on the word prompt and eager as trout for fly. 'Friend, you bet your worthless life!'

"Next Palsied Ned jiggles up, with an angry automatic pistol, and starts weaving imaginary lead patterns over my carcass.

"'Look out!' I bellows, feeling mighty nervous. 'If that shivering old squill once turns loose with that rapid-fire squirt-gun, he'll burn and shoot like a pin-wheel, and you will have to chuck him in the creek to extinguish him!'

"'Ranger,' says Big Andy, suddenly heaving into sight from a private fort of his own; 'Ranger,' says he, 'this is no time for persiflage and undue levity. The worst has happened. Our helpless little ward, knowing in that

wonderful way which is the protection of all children that sheep is in the country, has turned deadly sick.'

"While I am cogitating over this turn of events, Salmon River Sam sticks his head through a bomb-proof and hollers:



"UP TO THE BRIDGE WE CAME. . . . I HEARD THE GUARD YELL, AND THE NEXT CLEAR RECOLLECTION I HAD WAS RIDING PROUDLY OVER THE RICKETY BRIDGE LEADING A BAND OF BLEATING SHEEP INTO THE FORBIDDEN LAND"

"'She's got colick, by cripes, and I wanted to ground-slauce her, but they won't let me!'

"'How do the spells seem to take her?' I asks, thinkin' of nothing else to say.

"'Oh, sudden, hard, and near the middle,' replies Big Andy dolorously. And Missouri Mike added, quick:

"'The Supervisor and Nez Perce Polly have been nursin' her fer two days and nights.'

"So I sits there in my saddle for an hour or more, by the rude bridge that arched the flood, straining language with War Eagle's embattled pioneers, diagnosing kid colick, and thinkin' about the Supervisor between times.

"While I am there a cloud of dust drifts out of camp and the Supervisor comes loping up on his horse. First, he reports fully to the modern Horatios at the bridge the result of his clinic and Polly's diagnosis; takes him quite a while, too; then he crosses over to see me. I couldn't figger out this nurse-girl racket.

"'Ranger,' says he, as cool as a frog in the

spring-house, 'come along with me, for I'm going to get the first detachment of Applegate's sheep and cross with them.'

"I felt relieved that he was going to do the crossing, but neither of us spoke much.

"We rode back to the little meadow, where the sheep were just bedding down for the night. The Supervisor tells Applegate he hopes to have matters all fixed by morning, so that there will be no trouble. Meanwhile he has arranged for a single ewe and her lamb to enter War Eagle, as a sort of offering to the gods. So Good-

Eye Galloway cuts out a ewe and her lamb from the herd and gave gratis ideas of his own concerning the offering he'd liked to send to War Eagle.

"We drives the two critters back toward the bridge and I tried to find out from the Supervisor what was up, but he only remarks something about medical missionary, says *ex libris* and tells me to camp with Applegate and wait for orders at the bridge in the morning.

"We got to the bridge, and the guard let 'em pass—the Supervisor and his two sheep—gave 'em escort. Shucks! I couldn't figure what was up. Then way off in the timber I heard him singing, 'Mary had a little lamb, little lamb, little lamb.'

"Morning broke over that June day as if there wasn't any crime in the world. I felt just like saying grace at breakfast, and I rode darn slowly up to the bridge, thinking of my past life and feeling remorseful and repentant.

"Soon Graham comes rolling out of camp and has a long talk with the guard at the bridge. I could see something was up about the Kid and Polly, but I didn't know just what kind of a game it was. Then he calls out to me:

"'Ranger Barr,'" says he, so light and airy it made me mad, 'the sheep will go to their allotted range without further delay. Will you take charge and see that they get in quickly. Trail around the south side of the creek and keep well back in the timber and away from War Eagle. Stay with them tonight and return to War Eagle tomorrow morning. Tell Mr. Applegate that I would like him and Good-Eye Galloway to come into camp here this evening, as there are some important matters to discuss.' And then he rode away before I could say a word.

"None too quick, I goes back and digs out old Good-Eye and the lad and informs 'em the day of judgment was at hand, and they must answer for the crime of being sheepherders. Sounds funny to you, I suppose, but you never seen sheep stacked up in piles as big as a house and men's bodies hove into burning camps! Yes, sir, and I have!

"Along trail the sheep, blating and bawling and surging toward the old bridge, while visions of hangman's pine and rivers of blood flowed through my mind. Good-Eye was everywhere, singing bellicose Irish melodies that had a distinct sulphurous tinge. Aside from that, it was a fine morning, too fine to die—or lose five dollars!

"Up to the bridge we comes, and I heard the guard holler, and the sheep all stopped. I just dismissed the idea of resigning as Forest Ranger, and kinder wished I hadn't done some things in my life, and spurred my horse

for the bridge. I sees the defenders movin' around and I see the sunlight on some wicked-looking gun barrels; then Old Man Kelley steps two paces in front:

"'Squad 'tenshun!' he bellows in his General Sherman voice, while a hundred separate chills chase themselves up and down my spine.

"'Present arms!' he orders, and the whole blame guard swings up into salute!

"'Advance, Ranger Barr and Company!' yells Corporal Kelley, and the next clear recollection I had was of riding proudly over the rickety bridge, leading a band of bleating sheep into the forbidden land—and I out five dollars! I didn't loiter to any great extent, thinking they might experience a revulsion of feelings or

that Palsied Ned might get fidgety with his howitzer and commence to play!

"However, we slipped into the timber and kept goin' in a sort of trance. We trailed until it was time to bed down for the night; then Applegate and Good-Eye lights out for War Eagle.

"The only regret of my life is that I wasn't at War Eagle that night to take in all the ructions. They elected China Bob as cook and pulled off a barbecue, the lamb they got from Applegate being the burnt offering. Maybe those old-timers loathed mutton, but they overcome their repugnance long enough to pick the bones of that lamb clean. Then they eased off on to pipes and yarns, and from all I can gather had a jollification. Missouri Mike and Good-Eye Galloway gets together and figures out their dads was raised in the same county in Ireland, and then they went and pinched Palsied Ned's bottle of painkiller to celebrate the fact. The Supervisor he gets on his feet, pulls out the tremulo stop, and works the pathos-peddle in glorious manner—all about the sturdy pathfinders who carved out the Idaho Empire and about the little wilderness waif and the Indian nurse, and how these pioneers of War Eagle had adopted her, the true nugget of the camp, and all that. Then he calls on Applegate for a speech. Joe comes through like a man; says he wants to act square by all hands and do his part, so he offers to take the Kid down home, to his ranch, for the winter. Says Mrs. Applegate likes children, and they had a nice warm house and a doctor near. Promised to take good care of her and bring her back in the spring with a book on baby farming and clothes enough to last two years.

"Old Salmon River Sam, they told me, having no one to lock horns with, had to do something; so he starts



"I'D SEEN RANGE WARS BEFORE, OVER IN WYOMING—A THOUSAND OR MORE DEAD SHEEP PILED UP, AND SOON NOTHING BUT BONES LEFT TO DRY IN THE SUN"

The Mountain of Twenty Thousand Deer

By E. A. GOLDMAN AND S. B. LOCKE

STANDING on the south rim, one looks northward across the Grand Canyon of the Colorado River to the Mountain of Twenty Thousand Deer. It is a high, flat-top land which upon first glance appears to be very near—the flight of a flint arrow from the bow of an ancient redskin—but upon closer and more measured scrutiny it appears far, very far, away and wholly apart from the rest of the world.

The local inhabitant, pointing in its direction with bronzed hand, will say, "Yonder is Buckskin Mountain"; but your map, if at all recent, will show the region as the Kaibab Plateau. It is an isolated country, half encircled on the south by the mighty Canyon of the Colorado River and on the north by deserts of sand, sage, and juniper. To reach it from the south, one must cross the canyon—descend into the very bowels of the earth—a fright-inspiring task to all but the initiated and the adventurous. To reach it from the north, one must travel from the closest railroad point 160 miles, by pack train, wagon, or motor, over mountain ranges and across deserts of sand.

But, once reached, whatever of hardships the journey may have meted out will be as nothing compared to the wild beauty and picturesque and interesting character of the country. This high mountain plateau, touching an elevation of 9,000 feet, is garbed in boreal forests of fir, spruce, and aspen. From its higher levels these forests grade down to a zone of magnificent yellow pine flanked by areas of scrubby timber and desert. Over a large part of the plateau proper the country is flat or rolling and the forest floor free of underbrush, thus making travel easy and delightful. The forests are



broken here and there by grassy parks, fringed with aspen, trembling against a background of conifer greens. On the east there is a sharp break from the plateau down to the level of treeless, sun-baked Houserock Valley. On the north and the west the yellow pines fall away less abruptly to long points covered with juniper and pinons, and the mountains run out to meet the desert, while on the south the whole country at its highest point breaks abruptly into the chaos of the Grand Canyon, with the

Colorado River, six or seven thousand feet below, ceaselessly tearing out its rocky channel.

But why do we call this the Mountain of Twenty Thousand Deer? Because within this picturesque setting no less than twenty-thousand mule deer today roam the woods and ranges of the Kaibab Plateau. Nowhere else in the United States can the same number



WHILE THE DEER HAVE NOT BEEN HUNTED FOR YEARS, THEY ARE STILL VERY SUSPICIOUS OF ATTEMPTS TO STALK THEM. IN THE MORNING, AS SOON AS THE SUN STRIKES THE WOODLAND PARKS, MOST OF THEM ENTER THE TIMBER AND A FEW ONLY REMAIN IN THE OPEN DURING MIDDAY

of these deer be found in an equal area.

"Whence came this army of deer, and what is to become of them?" the reader may ask, and to answer the question one must begin at the beginning.

Years ago the Kaibab country was controlled largely by the Grand Canyon Cattle Company, through the own-



PART OF A HERD CROSSING "V T PARK"—A GRASSY, OPEN STRIP ABOUT ELEVEN MILES IN LENGTH. HERE, AT DUSK, ONE MAY COUNT 500 OR MORE DEER AND MAY READILY HEAR FAWNS CALLING, AS THEY BECOME SEPARATED FROM THEIR MOTHERS

ership of the watering places or their location as mining claims. The company used the ranges to graze their immense herds of cattle. But, as time went on, settlers began to come in. Among them were E. D. Woolley, well known as "Uncle Dee"; Uncle Jim Owens, Buffalo Jones, and a Mr. Onstott, who became affiliated under the name of "The Buffalo Jones Cattalo Company." These men also became interested in the Grand Canyon Transportation Company, furnishing pack outfits for tourists to cross the Grand Canyon. They constructed a cable crossing at the mouth of Bright Angel Creek. Largely through their efforts, a bill was passed by Congress in 1906 whereby the area within the Kaibab National Forest was proclaimed by President Roosevelt as the Grand Canyon National Game Preserve.

Besides this, they brought in a considerable herd of buffalo (about 75 head of which are now ranging in Houserock Valley) and Persian sheep, and had a very elaborate scheme whereby they were to develop hardy types of cattle and sheep by crossing them with domestic stock. The preservation of the deer and the development of the game resources was considered desirable, in order to attract tourists. These forward-looking pioneers later planned to enlarge the game preserve and bring in elk, antelope, moose, and other animals; to establish a natural zoölogical park, from which animals could be obtained to supply parks and museums. Even exotic species, such as zebra, camels, etc., were to be introduced.

The game preserve, as its boundaries stand today, is roughly 35 by 45 miles in extent and occupies practically all of the Kaibab National Forest. It is adjoined on the south by the Grand Canyon National Park, which includes the southern end of the Kaibab Plateau and the Grand Canyon. The snowfall on the higher sections, which reach an elevation of about 9,000 feet, may reach a depth of 10 feet, and the summers are short and cool.

Snow seldom falls in the adjacent canyon bottoms, which have an elevation of only about 2,000 feet and where mild winters and excessively hot, dry summers are the rule. The killing of game animals and game birds is prohibited except under regulations prescribed by the Secretary of Agriculture. Owing to its natural isolation and the difficulty of access, it has been relatively easily protected and poaching has been infrequent.

The wide range of life zones included and the variety of climatic conditions represented make it a section particularly favorable for game. When first established, in 1906, there were estimated to be on the Kaibab Plateau about 3,000 deer. These had been much hunted, but, owing to favorable conditions, still existed in moderate numbers.

After two years' protection, an estimate of 4,000 head was made. The estimate four years later, in 1912, was placed at 10,000. An estimate by the authors during the spring of 1923, and regarded as conservative, places the present number at 20,000. Many men who know the country well believe that there are twice as many.



In summer the deer congregate in several places, the best known of these being "V T Park," a narrow open grassy strip about 11 miles in length, situated about the middle of the southern part of the plateau. The main highway to the Grand Canyon extends through this park, and deer are present in or near it all times of day and night. At dusk herds of from a few head to fifty come out to feed on the grass and clover. An automobile trip the full length of the park may at that hour enable one to count between 500 and 600 deer. Although not wild, they are shy; but, occurring in such numbers, a wonderful opportunity is afforded to observe their habits.

It is one of the few places where one may readily hear fawns calling, as they become separated from their

at night, care must be taken not to strike those which become confused by the lights.

Four principal factors determine the number of the deer on Grand Canyon National Game Preserve: the amount of forage available, the natural rate of increase, the drift to other areas, and the number destroyed by predatory animals.

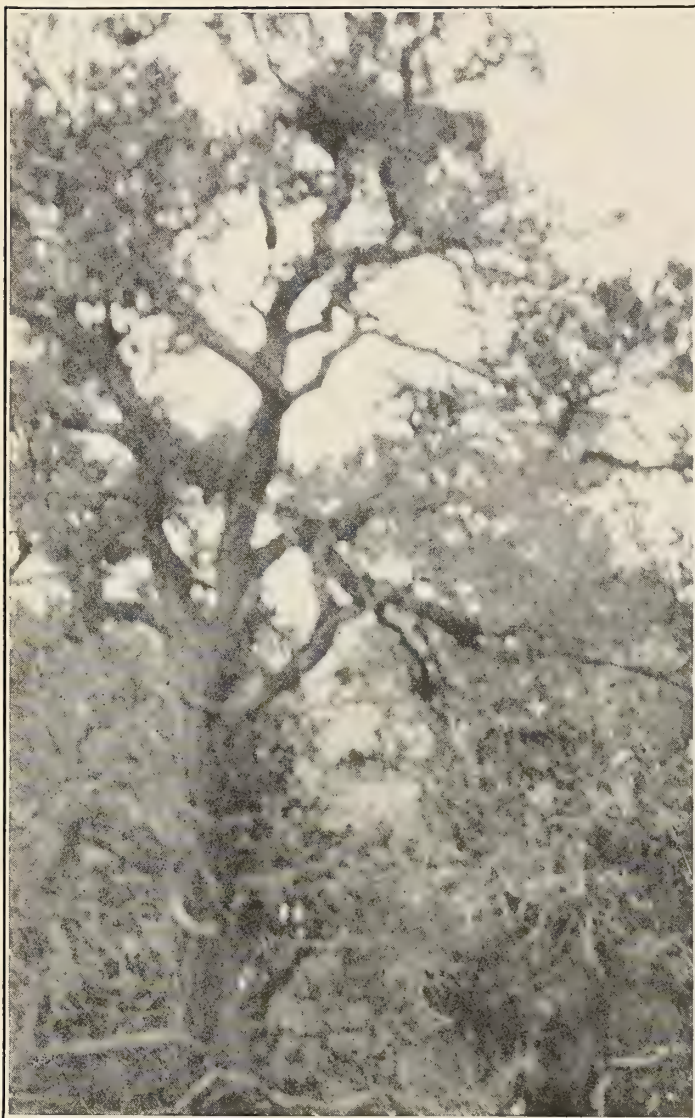
The entire section has for many years been intensively grazed by live stock, owned by cattle companies and by local residents, who are partly dependent upon it for a livelihood. In 1909 the Secretary of Agriculture set the maximum number of stock to be grazed on the Kaibab National Forest at 14,000 cattle and horses and 7,500 sheep. In order to protect the range from overgrazing



A FAMILY GROUP AT DUSK—A FAMILIAR SCENE IN "V T PARK," ONE OF THE FAVORITE MEETING GROUNDS OF THE 20,000 DEER WHICH ROAM THE PICTURESQUE RANGES OF THE KAIBAB PLATEAU. THE GAME PRESERVE, AS ITS BOUNDARIES STAND TODAY, IS ROUGHLY 35 BY 45 MILES IN EXTENT, OCCUPYING PRACTICALLY ALL OF THE KAIBAB NATIONAL FOREST AND ON THE SOUTH SIDE JOINING THE GRAND CANYON NATIONAL PARK

mothers. Two fawns were observed by one of the writers suckling, but when a third fawn decided to attend the party it was given a reception by the doe that clearly indicated it was unwelcome. While they have not been hunted for years, the deer are still very suspicious of attempts to stalk them, and break away with the peculiar bounding gait characteristic of mule deer. In the morning, as soon as the sun strikes the park, most of them enter the timber and only a few remain in the open during midday. In driving through the park by automobile

and to provide forage for the increasing deer, constant reductions in the number of live stock permitted have been made, until the authorization for the present year is only 5,685 cattle and horses and 3,650 sheep. A reduction of 850 cattle was made because of the area set aside as the Grand Canyon National Park in 1919. These urgently needed reductions have been beneficial to the range, but, owing to the fact that deer feed largely on certain kinds of browse in preference to grass or other available forage, the browse is very closely cropped.



MANY DEER AND MUCH LIVE STOCK HAVE BEEN DESTROYED BY MOUNTAIN LIONS ON THE PLATEAU. THE PHOTOGRAPH SHOWS ONE OF THESE MOUNTAIN CATS WHICH HAD BEEN TREED BY DOGS

In the fall of 1922 grass was generally plentiful, but nearly everywhere the aspen, dwarf ceanothus, white fir, snowberry, and locust were very heavily browsed. The white fir and locust trees are stunted and grow slowly until they become too tall to be reached by the deer. It is doubtful if an aspen tree can be found under three feet in height, and in places the ceanothus and snowberry are being killed. This is caused by deer browsing, since it occurs on areas where stock seldom go. Aspen trees cut in building a telephone line were stripped of leaves within twenty-four hours. A blind for the purpose of obtaining photo-

graphs of deer was destroyed within two days, the deer having stripped the leaves from the aspen brush of which it had been built. Although the cliff rose, quinine bush, and the early grass are grazed in places very heavily, and even the junipers trimmed on the winter ranges, these have an opportunity to recover while the deer are on the summer ranges. Except in these areas of concentration, where 500 deer may be seen in half a day's ride, the winter ranges are much less intensively utilized than are those occupied in summer. While the deer are still in good flesh at all seasons of the year, there is need of immediate action to control the increase. Even with the present numbers, there can be very little reproduction of aspen and certain classes of forage relished by deer, and their range will become progressively less productive. Further reductions of live stock would be of little benefit to the deer, since the stock and the deer prefer in general different kinds of forage, and there is sufficient grass for the present number of cattle which the deer do not utilize.

It is more common than not to see a doe with twin fawns. An index of the rate of increase is the counts made in the fall of 1922, when the fawns were well grown and past many of the dangers to which young animals are subjected. These counts gave a number of young deer about equal to that of adults in the same herd. Again, in March of this year, the counts indicated about an equal number of young and old animals in several large herds. The figures alone would indicate the rather startling increase of 100 per cent annually, but does and the young stay in the larger bands, while the old bucks tend to keep by themselves. With due allowances, the increase probably totaled at least 8,000 for the past year.

As the game preserve is partly inclosed by the Colorado River and nearly impassable ledges, the natural dispersal of deer into the surrounding territory is difficult. Considerable numbers enter the breaks of the canyon in the



A JUNIPER TREE ON JUMP-UP POINT, IN THE GRAND CANYON NATIONAL PARK, HEAVILY BROUSED BY DEER ON THEIR WINTER RANGE



A WELL-KNOWN HUNTER IN THE KAIBAB COUNTRY IS "UNCLE JIM" OWENS (SHOWN IN THE PHOTOGRAPH AT THE RIGHT), WHO HAS KILLED MANY PREDATORY ANIMALS IN THE PROTECTION OF THE RANGES OF THE GAME PRESERVE. MOUNTAIN LIONS WANDER IN FROM SURROUNDING AREAS, WHERE FOOD OF THEIR FAVORITE KIND IS LESS ABUNDANT, MAKING SYSTEMATIC HUNTING OF THEM MORE OR LESS A NECESSITY

Grand Canyon National Park in winter, but are unable to cross the Colorado River. At the northwest boundary, herds of deer may work down in a few places across Kanab Creek. The increase of deer in the Mount Trumbull country, west of Kanab Creek, is believed to be due in part to this drift, but it is not extensive. A few probably pass across the upper Houserock Valley to the Paria Plateau. Both here and on Cedar Ridge, north of the game preserve, the range is heavily grazed by sheep and goats and considerable illegal shooting is reported, both of which would tend to prevent drift. For various reasons, deer are not numerous on the north end of the game preserve. The combination of conditions preventing drift very materially increases the concentration and the number of deer on the game preserve.

In 1907 it was estimated that there were 100 mountain lions or cougars on the plateau. At that time they destroyed many deer and much live stock. One man who had 200 mares was reported as having only ten colts left at the end of the season, on account of their depredations. "Uncle Jim" Owens was hired to hunt the lions, and at the end of 1910 reported that he had killed 119. He estimated that probably 20 of these animals were left. No doubt many mountain lions have wandered in here from surrounding areas, where deer was less abundant. For a few years systematic hunting was abandoned and lions increased. Mr. Owens has hunted some each year with sportsmen. Since 1916 Biological Survey hunters, work-

ing here part time only, have killed 71 lions. The most successful of these hunters is Mr. Scott Dunham, who, with the aid of his dogs, has killed 30 lions, although the dogs were used here only part of the time. He believes that there are now over a dozen lions left on the game preserve, and there are undoubtedly fewer than at any time since its establishment. However, because of a constant drift to the area and the fact that some lions stay in sections where they cannot be hunted successfully, almost constant efforts will be necessary to control them. The Biological Survey hunters have turned in also the scalps of more than 1,200 coyotes and bobcats taken in this area.

Coyotes, the greatest enemies of the deer at present, are numerous and bobcats are also common within the area. Coyotes, working in pairs or several together, are known to have killed full-grown deer, but the greatest damage by both takes place when the fawns are small, as evidenced by the carcasses found. The does will fight to protect the fawns, even attacking a mountain lion under such circumstances; but they leave their fawns to feed, and no doubt the coyotes and bobcats find many of them when the mothers are absent. A few deer die from the effects of an eye disease known as "pink eye." Their vision is affected for a time, and several are reported to have been found that had evidently been killed by falling over ledges.

Consideration of the rapid increase, restricted migra-

[Continued on page 682]

Saving Forests by Saving Paper

By WARREN B. BULLOCK

THROUGH the concrete canyons of a great city's street careers a huge truck, loaded to the second-story windows of the street's skyscrapers with huge bags and bales of waste paper.

The casual passer sees only a crew of foreigners armed with iron hooks to enable them to throw the big bundles to the top of the truck. The man who knows what is done with this paper, however, sees more than the collection of junk; hears more than the jabbering jargon of a squad of foreigners. Instead, he sees waving forests of hundred-year-old spruce or balsam. He hears the singing of the wind through the branches of the evergreens. He sees and hears what the average city dweller little dreams, that the collection of this waste paper—the junk of a great city's offices and stores—means a saving to America of a part of its remaining forests. Every six tons of waste paper collected is the equivalent of the saving of one acre of spruce pulpwood from the ax of the pulpwood cutter.

The importance of the waste-paper industry to America is little appreciated, certainly by the general public, possibly even by the men engaged in the collection or the utilization of waste paper. The waste-materials industry is a highly organized American industry, with its ramifications beginning with the bearded collector of junk, whose daily job is to traverse alleys, visit back doors, and buy such paper, rags, or metal as he can carry away in the burlap bag hung over his shoulder. From this individual the waste materials go upward, through warehouses and sorting rooms, until the waste paper, finally classified into a dozen or so grades, is distributed among the paper mills.

The waste-collection industry alone involves many millions of dollars. In fact, the industry claims to rank in the billion-dollar class. One thing is certain, the paper manufacturers of the United States alone pay the waste-paper men the surprising figure of \$50,000,000 a year. And this represents about two million tons of waste paper,



THE PASSERBY SEES ONLY A CAREERING TRUCK, BUT THE MAN WHO KNOWS SEES YOUNG FORESTS OF SPRUCE AND BALSAM SAVED BY THE SORDID GATHERERS OF WASTE PAPER. THE PAPER MANUFACTURERS OF THE UNITED STATES PAY THE WASTE-PAPER MEN \$50,000,000 A YEAR AND SALVAGE THE EQUIVALENT IN PULP OF THE YIELD FROM 300,000 ACRES OF GROWING FOREST

which is the average consumption of the mills of the country.

Were it not for the utilization of waste paper, there would be a depletion of the forests amounting to some three hundred thousand acres of timberland every year. That is when account is taken of the fact that every six tons of waste paper produces the equivalent in pulp of an acre of virgin timber.

When one sees the huge truckloads of paper working through city streets engaged in this form of forest conservation, it is hard to realize that the demand for waste paper is so great that hundreds of tons are imported from foreign lands. And yet such is the case. Great as is the waste-material collection system of the United States, there is some twice as much wasted paper destroyed as is collected and re-used, and, to meet the lack, hundreds of shipments are imported from other countries, where, perhaps, the public is more thrifty in the saving of its used paper.

Two chief branches of the paper industry use waste paper—the board and the book-paper mills. The book-paper mills are dependent in large measure for waste paper of good grade for their mills. Old magazines, books, clippings, etc., are in demand for the manufacture of paper for magazines and book publishers. Of course, a large amount of new wood pulp is used in the manufacture of this paper, but such book-paper centers as the Kalamazoo (Michigan) valley are consumers of huge quantities of waste paper.

The paper-board industry represents the largest total tonnage of any branch of the paper industry, with a total of over two million tons of board manufactured in 1922. The value, of course, is not as high as that of some of the finer papers, but the forest conservation effected is



CHECKING IN WASTE PAPERS COLLECTED FROM HOMES AND OFFICES BY THE "DOWN-BUT-NOT-OUTERS" AT A SALVATION ARMY HEADQUARTERS IN NEW YORK

a tremendous item in this group of the paper industry.

Instead of reaching the peak of possibilities of forest conservation by the use of waste paper, many think that there is a still greater future before the paper industry in the closer utilization of waste. The Forest Products Laboratory at Madison has made extensive experiments with the de-inking of waste paper for the making of newsprint paper, and this can be done economically, producing at the same time a satisfactory grade of paper.

If the Canadian campaign for the placing of an embargo on export of pulpwood to the United States is successful, a campaign which has been progressing for the last four years, there will be a further turning to waste paper

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SCENES AT THE BRONX DUMPS, SHOWING THE JUNK GLEANERS SORTING OUT WASTE PAPERS—THE FIRST STEP IN A HIGHLY ORGANIZED AMERICAN INDUSTRY WHICH IS EFFECTING A SAVING OF OUR FOREST RESOURCES





The Tamed Wild Apache

BY JAMES RENWICK MOFFETT

SPEAK of the Southwest and there arises in many minds a picture of vast stretches of burning, waterless desert, inhabited principally by horned toads and rattlesnakes, its only vegetation consisting of varied forms of cactus. A natural enough idea. The Southwest has been so often described as a desert that it may be something of a surprise to many to learn that in the State of New Mexico alone there are six National Forests whose combined areas total some nine and a half million acres. Fully 20 per cent of the state is covered with forest, and in one of its beautiful wooded areas, the Mescalero Apache Indian Reserve, the surviving members of the Apache tribes make their homes.

Most of us realize, in a vague sort of way, that there exists an "Indian problem." Much has been written on the subject. The home-loving and industrious Pueblo Indian, however, has been more frequently the subject of discussion than the erstwhile nomadic and dangerous Apache. But those who know the Pueblo Indians do not necessarily know the Apaches.

The Mescalero Apache Indian Reserve is in southeastern New Mexico and embraces 476,000 acres of beautiful mountain country. Within its boundaries are some of the best grazing lands in the Southwest and many acres of excellent farm land, for the most part not yet under cultivation. For the Southwest, where water is almost a deity, the reservation is exceptionally well watered by springs and streams. Well-built roads make almost every part of it readily accessible. Most of the reservation is heavily timbered, principally with pine and juniper and a generous

admixture of oak, cedar, and aspen. While much of the Southwest, especially the desert portions, is extremely hot during the summer months, the climate of the reservation home of the Apache Indian is delightfully moderate.

Because the Mescalero Reservation is somewhat off the beaten path of the transcontinental motor tourist, and perhaps because caring for Uncle Sam's wards is a task requiring all the tact, ability, and energy of those to whom the administration of the Apache's affairs has been entrusted, visitors have not been particularly sought after.

Once there, however, they are greeted cordially and assisted in finding camp sites to their liking if they care to tarry.

A recent counting of noses disclosed the fact that the total number of Apaches on the reservation is six hundred and thirty-seven. The tribal cattle herd, numbering about 6,000 head, and uncounted horses are maintained on the reservation. The value of the cattle alone, at present valuation, is well over a quarter of a million dollars. Because of severe drought last year, heavy losses were sustained by many Southwestern cattlemen. By dint of good management and constant care, there were practically no losses from the Apache herds.

This immense property is administered solely for the benefit of the handful of Indians who compose the remainder of the Apache tribes. Regardless of the fact that anything which is done for the general good, such as road-building, the clearing of lands, or general maintenance tasks, is quite as beneficial to one as to the other of the Apaches, none of them are called upon to perform any part of the neces-



ROBERT GERONIMO, SON
OF THE FAMOUS APACHE
CHIEF



TWO TYPES OF APACHE SQUAWS — PICTURESQUE REMNANTS OF A PRIMITIVE PEOPLE. THOUGH POWERLESS AND HUMBLE NOW, THE APACHE WOULD UNDOUBTEDLY REVERT QUICKLY TO HIS SAVAGE STATE IF LEFT TO HIMSELF, FOR "THE WAYS OF THE WHITE MAN ARE NOT HIS."

THE OLD SQUAW AT THE LEFT WAS NOT "CAMERA-SHY" AFTER THE REMOVAL OF THE "CURSE"



sary labor without adequate pay. For work done on the reservation the Apaches are paid the same wage that would be paid for similar labor in the open market. Even such individual efforts as the members of the tribe may make in their own behalf are rewarded, more often than not, by the bestowal of commendation, together with presents in the very practical form of generous chunks of beef.

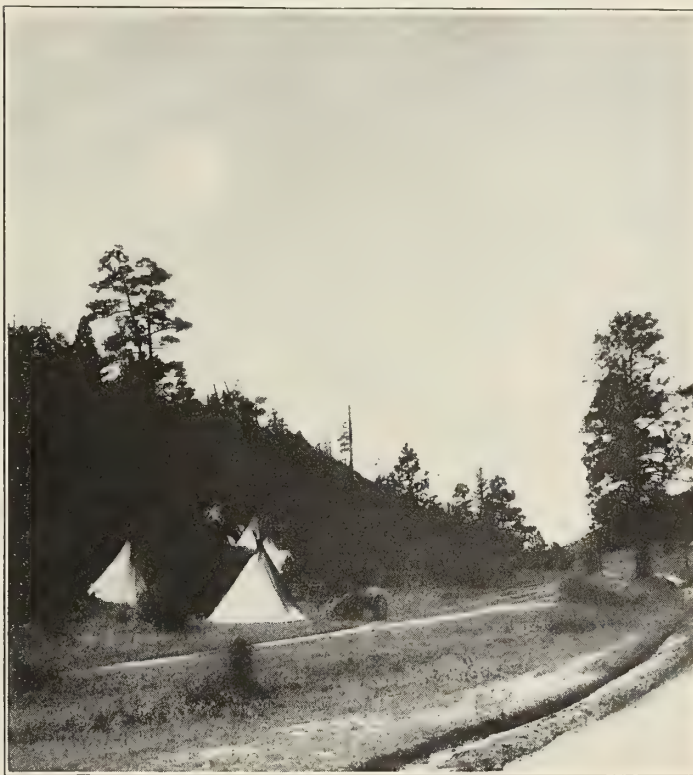
The Apache children are taught in a school which is quite up to city standards. The indigent are supported; the sick are cared for and, when necessary, treated in a well-equipped and splendidly maintained hospital. Apparently, everything possible is being done to make the Apaches a happy, thrifty, and contented people. The resources and material advantages which they possess are certainly far greater than those of the average white American, and it would seem that they *should* be content.

Yet they are not content! It is unlikely that they ever will be. They are a primitive people, removed by barely more than a genera-

tion from savagery, and it is no reflection on them, nor upon the administrators of their affairs, that they remain unhappy, regardless of their material advantages and their opportunities for advancement. Their ways are not the ways of the white man, and that is all there is to it. It

is for this reason that there will be an Indian problem until the last member of the race has disappeared. This is not said because of any streak of sentimentality, nor is it a veiled intimation that the methods used in the training of the Apache are wrong.

Fate decreed that the white man should take from the red the land which was once his domain. Debate as to the right or wrong of that procedure is useless. Even the most sentimental of writers and artists, whose chests heave with emotion because the picturesque Indian is not allowed to live his own life in his natural habitat, might be brought to admit that human progress is better served by the advanced methods of the white man than by the primitive ones of his red brother. The



THEIR FATE

Their father in a White House lives
And in a white house they;
But the father with tomorrow rides
And the son with yesterday.

—Owen Wister



CLOSE-UP OF A TYPICAL TEPEE. THE APACHE INDIANS CONTINUE TO PREFER TEPEES LIKE THIS TO HOMES OF A MORE SUBSTANTIAL CHARACTER

natural state of the Apache is a barbarous one, and civilization and barbarism cannot exist successfully side by side. One or the other must be dominant, and, no matter how sentimental we may be, we can better risk a trimming at the hands of our white friends than a scalping by our red ones.

A man born and reared among the Apaches described them to me as "an humble people." His term was an apt one. There is no doubt that the spirit of the Apache is broken. This humility found its birth in the realization that he had been overwhelmed by a superior race, and that he must conform to the white man's decrees. The fact that the present methods of the white man are kindly ones cannot erase the sadness the Apache must feel because of his lost supremacy in his own land. His days of fighting and conquest are over. He who once was fierce and feared has become powerless. It is not to be wondered at, that the remnants of the Apache tribes are now "an humble people."

The Apaches, particularly the older ones, are silent, suspicious, and uncommunicative. They have accepted the ways of the whites only so far as they have been practically compelled to accept them. On the Mescalero Reservation the men all wear their hair short and have adopted the garments of the whites. Native costumes are worn only on those infrequent occasions when dances and feasts are held. The

women in general wear curious combinations of native and American dress. Babies are carried strapped to the mothers' backs, in primitive fashion. Fortunately for both races, there have been no intermarriages of whites and Indians on the reservation.

The Apaches continue to live in the most primitive of tepees, in spite of the fact that they are encouraged to build more substantial homes. Rude shelters of boughs are usually built in front of the tepees, and fires for cooking and heating are built in shallow pits rather than on the surface of the ground. This method, by the way, is one which might well be adopted by vacationists and campers, as it greatly decreases the danger of scattering the fire and causing damage. For an Apache family to move from one location on the reservation to another is a simple matter, and when a death occurs in a tepee this is invariably done.

The Apaches cling to their superstitions. Witches are believed in as profoundly as many of our own people now believe in the return of the spirits of the departed. While some of the missionaries may not agree with me on the point, the incantations of the medicine men are still depended upon to cure sickness. When spear-heads are found, they become precious possessions, because of the belief that they are the ends of lightning bolts, and that the possessor of such a talisman is protected from injury by lightning. Some of the old Apaches, both bucks and squaws, are genuinely "camera-shy," believing that the making of a picture takes something from the soul or spirit. The greater number, young and old alike, have



THE SPIRIT OF THE APACHE IS UNDOUBTEDLY BROKEN; HE REALIZES THAT HE HAS BEEN OVERWHELMED BY A SUPERIOR PEOPLE; HIS DAYS OF FIGHTING AND CONQUEST ARE OVER; AND THOUGH THE METHODS OF THE WHITE MAN ARE KINDLY, HIS ATTITUDE IS EVER ONE OF DISCONTENT

learned, however, that the "curse" is effectively removed by a silver coin, provided that it be not too small in its denomination.

It is a matter of serious doubt whether any white man fully understands the significance of the Apache dances. It was not a matter to cause surprise that no Apache would discuss this subject with me with any degree of frankness, but it was surprising to learn that men who had been associated with the Apaches during the greater part of their lives knew but little more about the dances than I. Whatever of the Christian religion the Apaches may have absorbed, there seems little doubt that at the time of their dances they revert to their own forms of sun worship. Certain of their dances have been entirely forbidden. The usual effect of the holding of any of the tribal dances is noticeably to undo a considerable amount of the progress which may have been made in the Apaches' training.

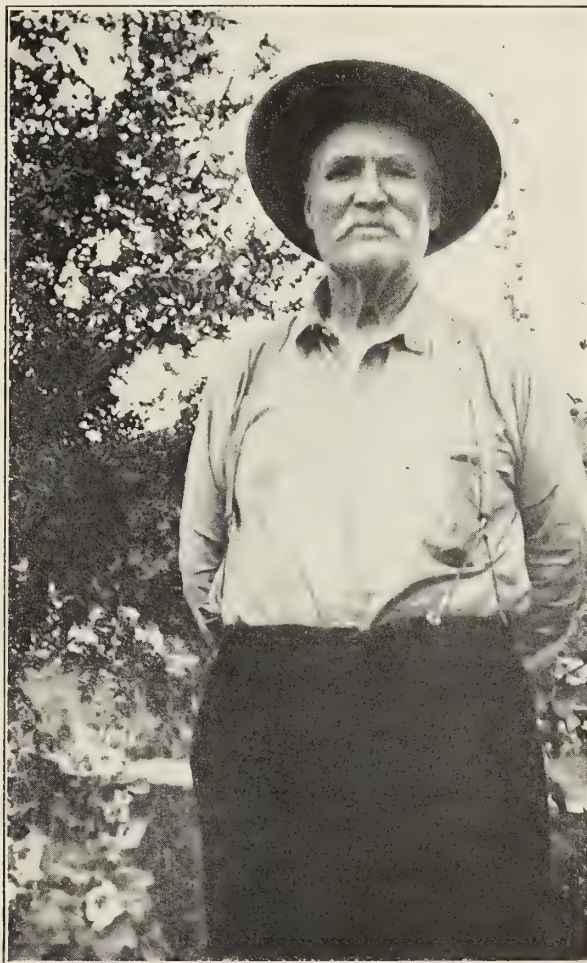
Certainly, these dances are interesting, primitive, romantic. It is difficult for members of the white race who are unacquainted with the Apaches to understand why they should be interfered with in any manner in this apparently innocent diversion. There would be a somewhat clearer understanding of this situation if those who favor the frequent holding of these dances could realize the extent to which they retard and destroy the efforts of those engaged in the teaching and training of the Apaches. Both before and after such celebrations, many members of the tribe are apt to become more or less unmanageable and morose. The dances stir up memories, not necessarily holy ones either, of things that have gone forever. All things considered, it is probably better for the Apache and his teachers if these dances are held infrequently or not at all, even though some of the rest of us are compelled to miss what is really a mighty good show.

It would be quite unfair to the Apaches were I to create the impression that none of them are appreciative of the efforts which are made in their behalf. There are those among them who realize the desirability of encouraging their children to take full advantage of the educational opportunities which are available to them. Then, again, there are those who delight in stirring up discontent and

distrust. There are "reds" among the Indians as there are among the whites—soap-box orators who would undo all the good that has been accomplished. The right of free speech has not been denied the Apache, although it seems to me to be a tribute to the patience and forbearance of the officials in charge that the few disturbers have not been dealt with in summary fashion.

Among the more interesting of the Apaches who live on the Mescalero Reservation is Robert Geronimo, son of the famous old fellow whose depredations caused so much trouble in the past. Robert is a graduate of Carlisle, an intelligent and industrious Indian. He is engaged in farming and goat-raising and is making a real success of his work.

The Apache tribe has one white member, Captain Samuel F. Miller. He has the distinction of having been elected to membership in the tribe by the unanimous vote of the Apaches, their action having the official sanction of the Indian Bureau. Captain Miller has worked among the Apaches for more than thirty years, and enjoys their friendship and confidence to an extraordinary degree. His membership in the tribe is no mere matter of empty glory, for by virtue of it he participates in all the tribal rights and privileges and shares in all the tribal property in quite the same manner as though he were an Apache by birth. During the Civil War, Captain Miller commanded a troop of the 11th



CAPTAIN SAMUEL F. MILLER, THE ONLY WHITE MEMBER OF THE APACHE TRIBE, TO WHICH HE WAS ELECTED BY UNANIMOUS VOTE. CAPTAIN MILLER SERVED IN THE CIVIL WAR AND WAS THE CARRIER OF GRANT'S FAMOUS MESSAGE TO SHERIDAN, "I INTEND TO FIGHT IT OUT ALONG THIS LINE IF IT TAKES ALL SUMMER"

Pennsylvania Cavalry. He afterward served under General Custer, and explains that he was on furlough at the time of the fatal battle in which General Custer and his men were massacred, and thus escaped a similar fate.

But Captain Miller has a still greater claim to fame. He relates that on one occasion he was the bearer of a message from General Sheridan to General Grant, whose headquarters were then at Spotsylvania Court House. "When General Grant had read the message," explained Captain Miller, "he looked up into my face and said, 'You tell General Sheridan that I intend to fight it out along this line if it takes all summer.' That message," continued Captain Miller, "put new heart into General Sheridan right away."

The Captain also told of another incident which, as far as I know, has never been recorded. It seems, as

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Plant Your City—Trees and Shrubs a Civic Asset

BY JULIA LESTER DILLON

City Landscape Architect, Sumter, South Carolina

TEN years ago it would have been almost impossible to find in the South one of the smaller cities or a small town where the municipality recognized the necessity of city planting and beautifying, and considered the question of enough importance to incorporate in its budget funds to cover the work of the Tree and Park Department. It is especially true in this section that our trees, and our towns as well, are like Topsy—"they jes' growed."

Until the General Federation of Women's Clubs took up the work of conservation, there was no concerted effort looking to civic beauty. Their civic leagues, garden clubs, garden contests, committees for beautifying school grounds, railroad stations, and court-houses, with their individual attempts to plant their home grounds artistically, followed by the movement inaugurated by the American Forestry Association after the World War, for the planting of memorial trees and parks, have brought

about an awakening. The tourists who have built homes in the South and brought landscape architects from other sections to make gardens for them have also helped.

Now, our towns are realizing their ugliness, are seeing their neglected trees, their crooked streets, or their bare concrete-paved driveways that are like ruled lines on a map, their grass-grown parkways on the sidewalks, and recognizing the need, are trying to find a remedy. They are also seeing the unbounded richness of the southern flora as a God-given heritage hitherto despised and unused. What has been a torment—riotous growth—is becoming known as an asset, more and more valued. This problem of city planting and beautifying is as wide as the South and is vital to her present and future progress and prosperity.

Intelligent planning is the first step in the campaign. This calls for a survey of resources and conditions. There must be an intelligent recognition not only of the present



A DELIGHTFUL AND ENTICING SPOT FOR YOUNGSTERS

One park, at least, should be more than well-shaded lawns, with graveled courts on which children can play. There should be many and different kinds of trees and shrubs, such as shown here.

conditions, but future development and needs must be considered and provided for.

On our city maps we have paved streets, sidewalks, sewerage, gas, and water limits marked. Then a census of the trees must be made. Listed in the field book will be the location, distances apart, variety, size, and condition of every tree in the streets and parks of the city. During the working season it is very easy to make this census while the workmen are pruning the trees. Their work helps much in deciding about the condition of each one, because it is practically impossible to estimate the decay of any tree until the dead wood is removed and the sound wood is tested. By transferring from the field book to the city map the location of each tree on the street lines, a glance shows how the trees are grouped, where they are needed, and how many should be planted. New trees are marked on the map with red ink, and from season to season it is easy to keep the record.

The field book also tells what kind of trees should be planted on a street to carry out the plantings already started, and whether or not the old trees are worth working on or new ones should be set among them.

One of the most important problems in the survey, and ultimately, is the location of the lines of poles and overhead wires on which are carried the telephone, telegraph, electric light, and fire-alarm services. On these wires depend the welfare of the city, and the companies con-

sider that they have absolute right of way. Where possible, all wires should be placed underground.

The future of the shade trees is inseparably associated with these lines of wires, and there must be co-operation between municipal officers and these service companies. Absolute municipal control is necessary to protect present and future growth. The key to the relief of the whole situation and abuses is to have some one person as recog-

nized authority. Then notify the light and telephone companies—they are the worst offenders—that no poles are to be set for new wires, not a twig or branch is to be cut on any tree, for the running of new lines or the changing of old ones, without consultation with this authority, be it city manager, tree and park commissioner, city landscape architect, or one of the members of the city council, who has agreed to serve in the capacity of Tree Warden.

If a lineman injures a tree by climbing with his spurs, which often makes fifty or more bark wounds, he

must pay the bill for repair—the damage is irreparable—but actual cost for labor can be collected, and one bill for this fault usually corrects it. Very soon the linemen learn how to take off branches without injuring the tree, to make a clean cut, and to paint the wounds. They have to know that they are being watched, however.

Other resources should be listed also, and, this done, we are ready to plan for street changes where necessary for either service or beauty. Some streets may have to



A LOVELY SPOT IN A MUNICIPAL PARK

A sun-dial to mark the sunny hours, and bird baths for feathered friends are necessary accessories to even municipal beauty spots. The deep shadows of the trees and the brilliance of the flowering shrubs in the border planting are striking and effective.

be closed, others opened. New lines of streets must be planned with adequate room for sidewalks, parkways wide enough in which to plant shade trees, roadways wide enough to carry the traffic, and if there are trees in the line of the right of way, parking places should be planned so as to preserve them. Paving construction companies are as ruthless in cutting down trees as the overhead-wire people are in cutting off branches, and several fights may be necessary to so control the situation in order to save the trees and force the city to make a parked space, with one tree or a line of trees set in a lawn plot for a beauty spot instead of a smooth, unbroken speedway of concrete or asphalt pavement—a temptation to racing motorists.

The location and condition of parks and playgrounds, if there are any, the reservation or acquisition of open spots to serve as breathing spaces, if future growth demands, is a most vital feature of any city plan. It is not hard to secure co-operation if definite plans have been formulated and are presented to the people on a working basis. The railroad companies at the stations, the county commissioners at the court-house, and the board of education in charge of school grounds will spend money for landscape development—if public sentiment calls for it. The people usually get what they want—if they want it hard enough.

Not only these places should be planted, but every building owned by the city, every spot under their control, should become a municipal beauty spot. Corporations should be called upon to do their part, and usually they are more than willing. In many places they are leading. Some of the southern railroads have done systematic work in this beautifying of terminals. They should be encouraged, and municipalities should insist upon attractive entrances to their towns. Corporations will stand by the towns when called upon. I know by personal experience. The city plan will cover, then:

1. Old and new streets, with all that is included.
2. Old and new parks and playgrounds.
3. All spaces and buildings under municipal control.
4. All buildings and grounds under corporate control.
5. The conservation of all present growth. Transplanting to be done, if necessary.
6. The abolition of all municipal plague spots.

Scientific planting is no less important than intelligent planning. It is just as necessary to know what to plant as it is to know where, and when, and how to plant. It is impossible to exhaust the planting possibilities, and the usual fault in street, garden, and park planning is in the selection of too many varieties. Most of the street trees planted by private property-owners are unsuited for the purpose, both from the standpoints of beauty and sanitation. China berries, mulberries, hackberries, ailanthus, poplars, both Carolina and Lombardy, all the maples and locusts, are good in their places, but are never good on the avenues where water or sewer pipes are laid or where artistic effects are desired.

The most beautiful streets and avenues in the world are those on which all the trees are of one variety. In a recent survey and census of forty-eight miles of trees, about 2,500 in all (there should have been 5,000), there were thirty-five kinds listed, of which only eight species were desirable for the purpose. This list of eight will cover the most satisfactory street shade trees for the southern states—perhaps a few more for the Florida and lower Gulf Coast regions.

Of these, the oaks are first for strength, endurance, and beauty. The pin oak (*Quercus palustris*), the willow oak (*Quercus phellos*), and the red oak (*Quercus rubra*) are more symmetrical, satisfactory, and longer-lived than the water and white oaks. The water oak is very susceptible to decay. Wounds of the same character made by



ENTRANCE TO THE SUMTER MEMORIAL PARK

A park planted with shrubbery, trees, and blossoms that follow the seasons in their whirl becomes an inspiration and an example to a whole town.

linemen on willow and pin oaks without undue damage have caused overwhelming decay in the water oaks. Restriction of the planting of street trees to the above-named oaks and to the elm (*Ulmus Americana*), the maidenhair fern tree (*Ginkgo biolba* or *Salisburia adiantifolia*), the sycamore (*Platanus occidentalis*), pecan (*Hicoria pecan*), and the basswood, the American linden (*Tilia Americana*), with all the trees of the same variety on each street, will in time to come give our cities avenues of unsurpassed luxuriance and beauty.

The evergreen oaks, Darlington (*Quercus laurifolia*), and (*Quercus Virginiana*) the live oak, with other evergreen trees, are much favored for street planting in the lower sections of the South. They should not be planted for shade trees unless the streets are very wide. They

are most attractive in their winter dress of green, but are somber, and winter sunshine is better than shade.

All buildings should have foundation plantings in which evergreens, preferably the broad-leaved varieties, predominate. There should be an intermingling of deciduous shrubs to give color and blossom through the year.

The coniferous evergreens necessary for accent and height and for specimen trees on the lawns are so varied as to make our choice embarrassing. *Biotas*, *thuyas*, junipers, cedars, cypresses, *retinisporas*, even firs and spruces, may all be reckoned as material governed only by the purse and the taste of the planter.

A park is beautiful if there are only stately trees, set in smooth-shaven lawns, and every open space in a city should be so planted in grass and trees and kept clean and well cared for. One park, at least, should be more than well-shaded lawns with graveled courts on which the children can play. There should be shrubbery beds with many varieties of native and foreign shrubs. There should be many and different kinds of trees, blossoming, evergreen, coniferous, and deciduous.

There should be many broad and colorful masses of flowers to please the eye, distract the mind, and rest the soul. Not necessarily expensive plantings need be made. The glowing sunshine of the California poppies, that seed themselves and recur season after season, are like sheets of clear gold in the foreground of the shrubbery beds. The azure of the African daisies, the snowy white-

ness of the Shasta daisies, with golden coreopsis, rich scarlets and orange of gaillardias, make wonderful masses of color and brilliance, with very little expense for either plants or labor in caring for them.

A park planted with shrubbery, trees, and blossoms that follow the seasons in their whirl becomes an inspiration and an example to a town. In one season the difference is noticeable.

Beautifying a city fosters civic pride, develops artistic instincts, and appeals to the higher side of men's natures. Anything that fills such a threefold purpose cannot be bought too dearly. A city developed on the lines of an intelligent plan, planted scientifically, maintained regularly under expert supervision, will be a healthy city, a righteous city, a prosperous city, and a veritable City Beautiful.

A Stately Oak Named for Coolidge

A STATELY oak standing on the estate of Roger W. W. Bason at Wellesley Hills, Massachusetts, was named after President Coolidge. A sign is attached to this ancient tree and bears the title "The Coolidge Oak." Beneath the title is the following verse that hangs in the home of the President in Northampton:

"A wise old owl lived in an oak;
The more he saw, the less he spoke;
The less he spoke, the more he heard.
Why can't we be like that old bird?"

WHAT A LITTLE FOREST FIRE DID TO BERKELEY



A SECTION OF BERKELEY, CALIFORNIA, DESTROYED BY A FIRE WHICH ORIGINATED IN THE FOREST PLANTATIONS OF THE EAST BAY WATER COMPANY. OVER 70 CITY BLOCKS WERE DESTROYED, AND MORE THAN 800 HOMES AND OTHER BUILDINGS WERE LOST. NEARLY 90 UNIVERSITY OF CALIFORNIA PROFESSORS LOST THEIR HOMES AND LIBRARIES. THE LOSS IS CLOSE TO \$10,000,000

Fording the Rio Grande in the Dark

My Most Exciting Experience as a Forest Ranger

BY WALTER J. PERRY

Winner of the Fourth Prize in the Ranger Story Contest

ARE all men cowards in the dark? It is then that our imaginations run riot, magnifying real risks and peopling our paths with all sorts of imaginary dangers which our reason, try as we may, cannot dispel.

It happened back in 1912 or 1913, when I was in charge of improvement work on a southwestern forest, building roads and trails and constructing a system of fire-lookout telephone lines. The forest lay in two divisions some 30 or 40 miles apart, with the tremendous Rio Grande Gorge between. I was on the western division, planning and getting material together for an important lookout line, when, on coming in with the district ranger at 11.00 one night, Mrs. Ranger handed me this message: "Meet Mullen at Eagle Rock tomorrow a. m." Now, the Eagle Rock, by any known trail or road, was a distance of some 65 miles at least, and Mullen was our district engineer, come up to go over an important piece of road work with me. Also, of course, the message was intended to have reached me that morning instead of at midnight.

Now, there was and is a sort of unwritten law in the Service to the effect that "cussed be he who for his own mere convenience keeps another waiting." And whoever did so probably got duly "cussed." Considering, however, that the matter was not one of getting to a forest fire, and that both my horse and I were tired, I turned in and slept until an early breakfast. Then I doped it out that by riding cross-country and crossing the Rio Grande via a "sheep bridge," which I had heard about, at the foot of Cerro Olla, instead of by Long John's bridge, 20 miles below, I could save 25 miles or so and do all that was humanly possible to live up to our code of "be there."

My route skirted the foot of Cerro San Antonio, Wind Mountain, and Cerro Olla, and from the San Antonio Lookout had the appearance of being comparatively

smooth and level. Save the mark! The mountains mentioned are all extinct volcanoes, and the intervening "level" I found to be a veritable "bad lands," that being a literal translation of the name the Mexicans apply to it—*malpais*. The ground was covered by loose, broken lava rock, with frequent "blow-out holes," as they are called, which are simply basins with low, but frequently sheer and impassable walls. Picking my way and detouring these blow-outs, I reached the brink of the Rio Grande Gorge at sundown—two or three hours later than I had figured.

The Rio Grande Canyon for a great many miles is a small edition of the Grand Canyon of the Colorado, except that the former is a great ragged gash through successive strata of lava with soil and gravel interstratified, which helps it to break and tumble. In most places it is utterly impassable, and at the very few possible places the crossings range from bad to damn bad. The "sheep bridge" crossing was located at one of the latter.

Having come this far, I could not, of course, turn back, and, besides, the water several hundreds of feet below looked mighty

good both to "Robin" (my horse) and me. Tying up my reins, I told him to come on. There was no horse trail; there was *no* trail. Nothing but a Mexican goat, bred in the purple, could safely negotiate that descent. But we made it, the horse being spurred on by my call to "come" and the sight of the water (he had had none since early morning). But it was already dark in the canyon, as we slid down the last bank. The alleged "sheep bridge" we found was two long poles thrown across a narrow mill-race, where the waters churned and foamed among the jagged boulders of black lava. These poles had at some time been covered with short one-inch scrap lumber, forming a flimsy bridge about thirty inches wide, but some uncivilized sheep-herder had removed most of the boards to



I LOVED THAT HORSE BETTER THAN—WELL, NEVER MIND,
HE WAS A MIGHTY GOOD HORSE

make a camp fire. It was by now entirely dark, and it began to look discouragingly like I would not "be there."

I unsaddled, built a small drift-wood fire, and waited for the moon—a pale, faded-out one—to come over the brink of the canyon wall. Then I prospected for some place possible to ford. Working my way among the great tumbled boulders, at last I found a comparatively smooth and broad piece of water about 200 yards below the bridge. How deep was it? How swift? Would it swim my horse; and, if so, could he make it across before being carried into the next rapids below? Was the bottom smooth or a bed of jagged boulders, with deep holes between, in which to break a leg or hang a foot and drown him? How was the landing on the opposite side? Could he climb out or was it, perhaps, a bench dropping off into deep water? All these questions in turn bobbed up their terrifying heads, and as I stood at the edge of the water the foaming rapids below chuckled and jeered and smacked their chops, and the black water seemed to grow deeper, to rise eagerly and reach like a live thing for my feet—and my courage oozed out through my toes. I was afraid! But farther downstream the river was worse; it was this place or nothing.

I came back and threw stones into the water, commencing at the farther shore and coming across, listening intently for the shallow "splash" or the deep "chug." It seemed mostly "chugs." I had no doubt but I could swim the river myself on a pinch, but if it drowned my "Robin" I would hate it from its head springs in the Colorado

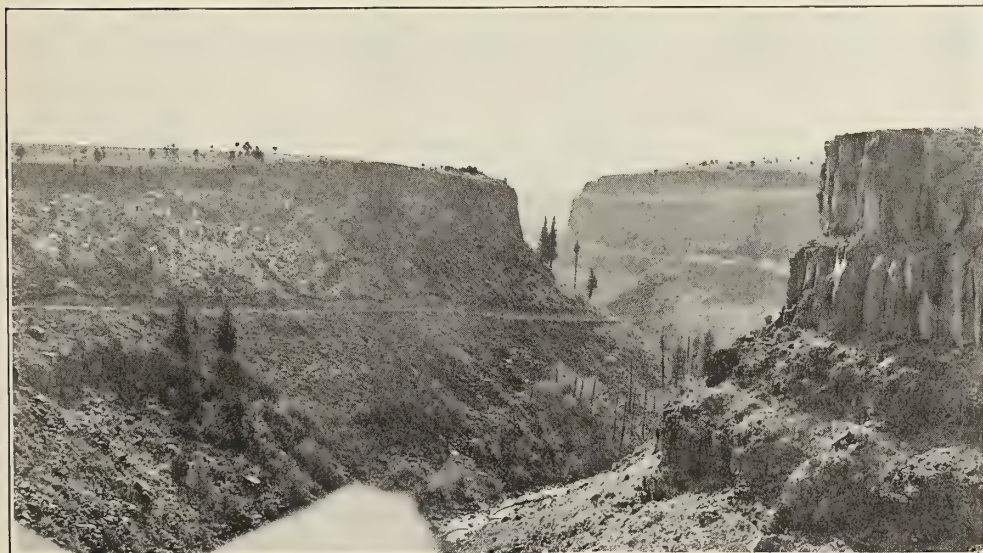


CROSSING BY THIS BRIDGE—LONG JOHN'S—20 MILES BELOW, MAY HAVE BEEN SAFER, BUT IT MEANT A LOSS OF SEVERAL HOURS IN REACHING MY OBJECTIVE

Rockies to the Gulf of Mexico. It would do me no good to get across the river, if I were left on foot there. Besides, I loved that horse better than—well, never mind, he was a mighty good horse, and he knew nothing of having to "be there," but only to do as I asked him.

At last I piloted my horse down to the proposed ford and told him we would make a try for the other bank. Then I tied my boots, coat, and gun on the saddle, and, taking my courage in my teeth, rode into the river. The current was strong and the bottom rough, but the depth luckily not quite swimming. My "Robin" was not half as scared as I. He lacked imagination, perhaps, while I must admit that mine was working overtime. Nevertheless, he was extremely careful of his footing, reaching out and feeling his way, and if his hoof felt nothing solid, gingerly withdrawing and replacing it. At last we got across without a serious stumble and found a fair landing place, and I paused to let my hair assume its normal prone position, and to register a solemn oath that in the future if I had business on the opposite side of the Rio Grande that could not wait until daylight, well, I'd simply ride around the darned creek.

After tremendous difficulty in ascending the other side, which was in deep shadow, going ahead and prospecting a way for a few yards at a time, jumping up over bench rocks, etc., we gained the level and reached the Eagle Rock Station between midnight and the dawn. We were "there"! Feeding "Robin," I crawled into the hay above him, and about ten



A SMALL SIDE CANYON LEADING INTO THE RIO GRANDE GORGE, WHICH IS ALMOST IMPASSABLE AND WHERE THE CROSSINGS RANGE FROM BAD TO WORSE, WITH THE "SHEEP BRIDGE" LOCATED AT ONE OF THE "WORST"

[Continued on page 704]

Public Action in Forestry Imperative

BY HENRY S. GRAVES

IT IS now imperative that forestry shall be given its proper place in the vital affairs of the nation. We cannot adequately provide for our future needs except through a great project, conceived, adopted, and appropriated for as was the Panama Canal.

EVERY one familiar with the facts knows that if we should begin today to put our forests in shape, protect them, and handle them according to the most approved methods, every cord of wood and every sawlog that we could raise during the next one hundred years would be urgently needed long before it is ready for the ax.

Today our virgin forests are 70 per cent gone. In a little more than one hundred years a nation growing from a few million people has consumed almost a continent of timber. It is time to ask ourselves how long one-third as much timber will last a nation twenty-two times greater in population.

The purchases of forest land actually made by the Government under the Weeks law comprise about 2,000,000 acres, and the area cut off and denuded in the same period has increased over 69 million acres. It is essential that the purchases of forest land by the Government more nearly keep pace with the progress of deforestation.

Data already at hand show beyond any question of doubt the necessity of protecting the forests we now possess and of beginning at once to grow more forests. If we fail to do this, not our grandchildren, but our children, will suffer grave consequences.

Congress is now making appropriations for buying forest lands at the rate of less than one-half million dollars a year—a sum utterly inadequate to our needs. We do not realize that the United States is making an investment in the acquisition of forest lands which will yield tremendous returns and which will soon be on a self-supporting basis. And while Congress is scrutinizing these small items with the utmost economy, it is making large appropriations to meet other national needs of less immediate urgency to the permanent welfare of the nation. A sum equivalent to the cost of two modern battleships, if appropriated to national forestry now, would prevent an impending economic disaster.

In spite of the great mass of incontrovertible arguments advanced in behalf of an adequate national forestry policy, and in the face of unmistakable evidence that we are surely approaching economic disaster because of our fast-disappearing timber supplies, we as a nation still continue to "throw chips on the water to see how fast the flood is rising."

Can we permit ourselves longer to continue in the belief that our timber requirements can be met at the last moment, when our need has become so gripping that the nation, to a man, must arise to meet it? Can we not see that no amount of money and no amount of equipment, provided at the last moment, will grow timber fast enough to meet an emergency already upon us?

We built war machines and trained millions of fighting men in a matter of months, and because we turned the tide in the World War, we find ourselves more or less philosophical over the waste of life and money which was directly attributable to a lack of preparedness; but we cannot grow trees large enough for saw timber in less than fifty years, no matter how many lives we would sacrifice or how many billions of dollars we would expend in the effort.

We delay. We put off attacking the problem while our forest

capital grows smaller and smaller. We court the day when our need for wood becomes so dire that public opinion will demand a national expenditure of one or two hundred million dollars a year. It is obvious that, under the pressure of an immediate emergency, such a sum cannot be economically spent, and that industrial and economic distress cannot be ameliorated. However much we spend, we must wait for the timber to grow. Future wood requirements of the nation must be provided for in advance. There is no other way.

One hundred million dollars now, advanced over a reasonable period of years, made available as the fiscal conditions of the country permit, will do what one billion dollars cannot do when the emergency is upon us twenty or thirty years hence. This would be an investment insuring a large actual return as to principal and interest, for the Federal Government.

Forest lands should be so blocked that proper administrative and protective methods can be maintained. This often involves much negotiation in the securing of options and tedious work in the search of titles, the making of surveys, and the preparation of maps and records. No matter how skillful the Forest Service may be, much valuable work and many options will be sacrificed if adequate Federal funds are not currently available behind these field activities. There must, therefore, be definite and continuing appropriations to take up the options before they expire, and also to permit the Forest Service to keep the scale of its activities in each region within the limits of good business.

The people and our statesmen must disabuse their minds of the idea that our present timber supplies will last another one hundred and fifty years, because at our present rate of forest consumption, through cutting and burning, fifteen years will bring the pinch of forest exhaustion upon us. As far as the great bulk of consumers is concerned, we are already feeling the pinch. The average man who wants to use timber is now embarrassed by the mounting price of lumber, due in large measure to long freight hauls. Many of our people are thus prevented from constructing buildings they urgently need.

While 69 per cent of all our timber and 75 per cent of the remaining virgin growth lies west of the Great Plains (in Idaho, Washington, Oregon, and California), three-fourths of the forest land of the country, together with three-fourths of the population and agriculture and the greater portion of the manufactories, are east of the Great Plains. Taking all the timber species and products together, only 25 per cent of the amount cut and destroyed annually is replaced by the current growth. The other 75 per cent is an annual inroad upon the timber capital of the country. Our normal stand should be about 3,500 billion feet. It is now about 2,200 billion feet, and is being decreased at the rate of about 69 billion board feet a year.

It is now imperative that forestry shall be given its proper place in the vital affairs of the nation. We cannot adequately provide for our future needs except through a great project, conceived, adopted, and appropriated for as was the Panama Canal.

The Future War for Wood

BY HOWARD F. WEISS

IN THE history of the world, no nation has grown so rapidly or to such tremendous proportions as has the United States. From a few scattering handfuls of struggling colonies, we have in three hundred years risen to the most prosperous and powerful nation on earth.

This growth has been due primarily to favorable climatic conditions and to a wealth of natural resources that have attracted the most progressive of the civilized races and allowed them to develop under the most favorable circumstances. Intellectually, we are no higher than those in the older countries from which we came. Climatically, we have no advantage over the more powerful European nations. Then, why our stupendous growth and power?

Some may attribute it to the liberal form of government our forefathers constructed. Undoubtedly, this has been a powerful influence; but in several of the older nations abroad practically as great freedom to the individual exists as we now enjoy. In fact, some of these older countries boast of even a greater individual freedom than ours.

The greatest single factor back of our tremendous advancement has been a vast storehouse containing the richest resources in the world. Without these we would never have grown to a nation of first rank. These great resources may be summarized as a climate fostering a healthy development of highest mentality; fertile agricultural lands capable of growing crops essential to all human sustenance; wonderful forests of hard and soft woods; rich deposits of minerals essential to modern industrial development. It is this materialistic factor more than anything else that has contributed to make us what we are; and this should not be lost sight of.

This article has to do with but one of these human essentials—our forests; but it is difficult to treat of our forests without taking into consideration the effect of the forests on the other essentials, so closely are the forests

identified with them. Climate, for example, is influenced by forests. Hartig has shown that a single beech tree transpires through its leaves over two tons of water a day. Imagine, therefore, the millions of tons of water breathed into the air each day by our millions of forest trees. Graves has shown, in a preceding article in *AMERICAN FORESTRY*, the influence of the forests in arresting soil denudation and in their protection of agricultural products.

Even the development of our coal and mineral deposits would have been greatly restricted, if not in many places absolutely prevented, did not our forests furnish the

timber necessary to support the excavations and to protect the miners. In coal mining alone we consume over two hundred and ninety million cubic feet of timber annually. Were these bracings of steel or concrete, the price we are now paying for coal would be greater even than present high prices.

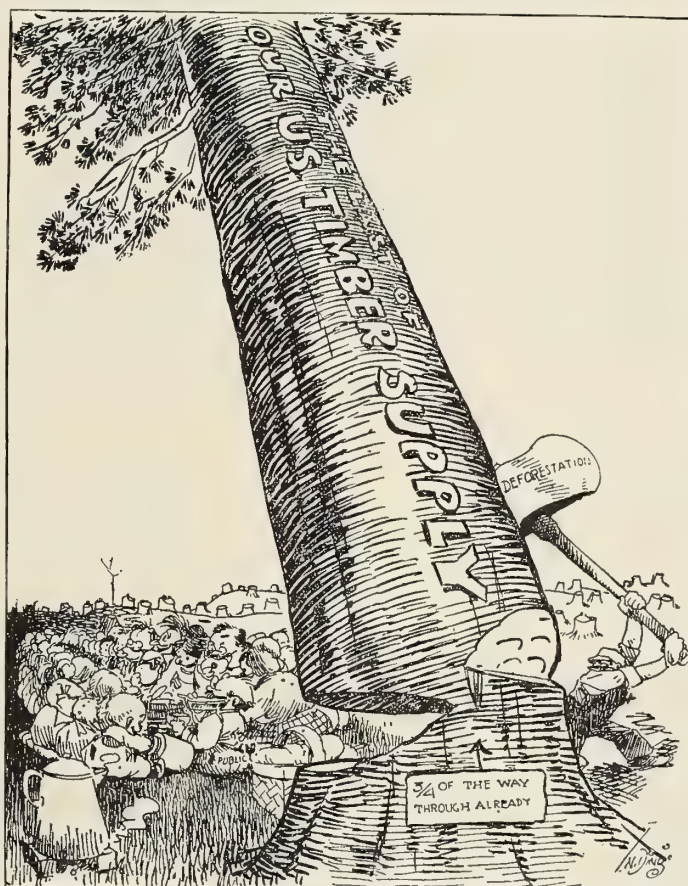
But it is with the direct economic contributions of our forests to our national existence rather than the indirect, important as they are, that this article has to deal. To appreciate the value of these direct contributions to our national prosperity, let us assume for the moment that our forests are exhausted. What would we lose?

An inventory of the quantity and value of direct forest products now produced annually in our country is given at the con-

clusion of the article. In addition to the enormous wealth shown in the table that is gleaned annually from our forests, we would wipe out practically all of the \$2,580,000,000 of capital now invested in mills engaged in the manufacture of lumber and lumber products.

Over eight hundred and thirty-nine thousand wage-earners are now employed in these sawmills and wood-working factories, constituting the third largest group of workers in the United States, and many, if not most, of these would have to seek other employment.

The pay roll of the above workers now amounts to



WHEN IT HITS 'EM, THEY'LL THINK IT'S A JAPANESE EARTHQUAKE

over \$847,000,000 a year. This would shrink to insignificance if our forests were exhausted.

Over three thousand furniture factories, employing over one hundred and thirty thousand wage-earners, would have to shut down or work at reduced capacity on imported materials.

The seven hundred and twenty-nine paper and pulp mills in the United States, employing one hundred and thirteen thousand wage-earners, would be in the same fix as the furniture factories.

Still higher transportation rates would prevail, because the one hundred million or more cross-ties used annually would have to be made of imported wood or from some more costly substitute, and the same would be true of the thousands of cars now hauling the products of our farms, mines, and factories. The cost of maintenance of telephone and telegraph lines would materially increase.

Coal would cost more, because no substitute for the two hundred and ninety million cubic feet of wood used annually as coal crops is available at anywhere near the cost of wood. Smaller or more expensive or less books, magazines, and newspapers would be printed.

Homes would be more expensive and the population would become more crowded; more people would live under the same roof, and this in turn would create a difficult social structure. Millions of dollars would be lost annually in wholesome forest recreation. Wild animal life would become woefully depleted. There would be an enormous increase in the cost of packing goods for shipment.

Our country would become a desolate-looking "China

in America" landscape. Living costs would go up, and we would have poorer living at that, for none of us, no matter how we may live, can escape the use of the forests in some form.

These are but a few of the host of minor products and articles almost without end that would be wiped out of existence, and with them the employment of thousands of our citizenry now deriving their livelihood from the manufacture and sale of these products.

Are these things worth preserving in our national structure? Already one of our great industries, namely, the manufacture of newsprint paper, has passed to the control of Canada, and we are now importing over two-thirds of the paper on which our American dailies are printed. Suppose the other industries listed above go the same way as the newsprint industry has gone, and we finally become dependent upon Canada and other foreign countries for our materials, is this the proper and wisest way to develop and protect our nation? How long can we remain great under such a policy?

In our forests we also have a basic natural resource of prime importance in our national defense. One of the best ways to weaken our military strength is to weaken this resource. Germany was able to hold out as long as she did largely because her forests supplied her with the cellulose from which she made her high explosives. What would the German resistance have amounted to without these explosives? Even our own rich country, in spite of the fact that it is the largest cotton-producing nation on earth, would have been forced to use wood as the raw



VIRGIN CONIFEROUS FORESTS IN WASHINGTON. WHEN SUCH FORESTS ARE DESTROYED AND THE LAND LEFT BARREN, AS IS OFTEN DONE, THE WHOLE NATION SUFFERS



VIRGIN HARDWOOD FOREST ON AGRICULTURAL LAND. WHEN SUCH FORESTS GIVE WAY TO CULTIVATED FOOD CROPS, THE TRANSITION IS NO NATIONAL LOSS

material for its powder, had the World War lasted much longer.

Millions of gunstocks are made from American walnut, for which purpose no better wood exists. In the modern infantry rifle, the wooden stock extends to the end of the barrel, and it is estimated that a new rifle is required at least once a month for every man at the front.

Modern warfare requires unparalleled quantities of explosives, and in spite of the enormous consumption of smokeless powders made from cellulose, black powders are extensively employed. Charcoal is one of the essential elements in black powders, and powder charcoal must possess such peculiar properties that it is made largely from dogwood, willow, and alder.

Wood, destructively distilled, yields two important chemicals, called wood alcohol and acetic acid. From seventy-five to one hundred tons of acetic acid are required to produce one ton of acetone, and acetone is one of the most important solvents required in modern warfare. Cordite, an explosive used by Great Britain, consists of approximately 65 per cent nitrocellulose, 30 per cent nitroglycerine, and 5 per cent mineral jelly. Great Britain realizes with Germany, perhaps more than other nations, the value of forests in time of war.

As a means, therefore, of national defense, and entirely apart from their value as a purely commercial and indus-

trial resource, the forests of our country are of dire necessity to our national protection.

The value of forests to our national existence seem incontrovertible. Wood is as much a part of our lives as bread. Men have been known to fight for bread because bread means physical existence. Wood means not only physical existence to many, but commercial existence and dominance to the nation. It is the cornerstone of our Bank of Natural Resources. Who can predict what manner of wars—commercial or otherwise—may follow a foolhardy policy of looting and destroying the principal which guarantees our national comfort, prosperity, and dominance?

And yet, what is being done to protect it? Most of us are doing nothing because the problem appears to be one of everybody's business. Anyone who takes the trouble to investigate will be unquestionably forced to recognize that our forest areas are being cut into far more rapidly than the new growth is replacing removed timber.

What, now, is the solution to this problem? Shoot the lumbermen? No. Stop cutting the forests? No. Put all the forests under government ownership and control? No. The answer is an aroused public consciousness to the importance of the situation, to the importance of our forests to our national existence, and then the creation of an atmosphere or policy that will encourage the protec-

[Continued on page 679]

The Increase of Game on Limited Refuges

BY GEORGE SHIRAS, 3D

A REFUGE for large game animals, whenever fenced or limited by natural barriers, sooner or later develops a state of acute starvation among its habitants. The loss in one or two seasons may suddenly amount to 50 per cent, and ultimately may include the entire herd, unless food is supplied regularly thereafter or the numbers of the game are reduced by shooting, by transportation from the area, or by such natural agencies as disease or the free range of predatory animals.

This condition applies to all game reserves, however well situated, and whether the initial herd be 5 animals on 500 acres or 25,000 animals with the range of a million acres. With the deer particularly this is true, for they are the most prolific of our antlered game. It has been scientifically determined that one female white-tailed deer and her offspring in a ten-year period will produce 130 animals, and that two dozen does will have 3,000 descendants in the same period. Therefore, however large the confined area, the animal inmates are doomed to starvation unless man steps in or allows Nature's drastic methods of controlling a species to have their way.

The time to act in any given case should be several

years in advance of the starvation period, for, with the protected animals rapidly increasing and the food supply on a proportionate decline, thousands may die in a single season where only a few may have died the previous year. The cause of such a sudden tragedy may be accounted for in the case of the deer family because of their feeding habits, since they are primarily browsers. When the herd is not excessive for a given area, each season's growth of annual and perennial vegetation will suffice, but when the numbers become too large a disastrous change takes place. New ground vegetation is permanently destroyed; sapling trees are denuded of their leaves, buds, or bark and die; and the larger trees, both coniferous and deciduous, are stripped of their limbs as far as the animals can reach, and though they may appear large and thrifty to the casual observer, thereafter they provide no food.

With grazing animals it is different, except sometimes in the case of domestic sheep, for the grass roots are not destroyed, and each successive season there is a fair crop, although necessarily disproportionate to the increasing number of animals. Under such a situation, there is



Photograph by George Shiras, 3d

A SAMPLE OF OVERBROWSING BY DEER—GRAND ISLAND, LAKE SUPERIOR

This beautiful island, of some 14,000 acres, is covered by a dense forest, but closed seasons on the native deer led to such a rapid increase in their numbers that they destroyed all ground vegetation, including saplings and brush, while the lower limbs of the larger deciduous and coniferous trees were killed, necessitating either an open shooting season or the sale and shipment of hundreds of animals and winter feeding of the remainder. In this forest, vision was originally limited to a few yards; now one can see a quarter of a mile. Many animals died before the condition was appreciated.

usually time to render assistance on the gradual appearance of unfavorable conditions, and sudden starvation does not occur.

In the summer of 1917 I visited St. Ignace Island, on the north shore of Lake Superior, a well-wooded tract of some 20,000 acres and more than 10 miles in length. For some years previously the moose had been increasing rapidly on this island, and on approaching it by boat it seemed an ideal place for this big-game animal. But appearances were deceptive. On landing and spending some two weeks investigating, it was estimated that there were over 300 moose then on the island; but in all this time I did not see any ground vegetation or live limbs on any trees within 12 feet of the ground, with the exception of spruce groves, which the animals cannot eat, and some vegetation on inaccessible cliffs, for all accessible forage on land was destroyed. This herd was then wholly dependent on aquatic plants, many of the animals feeding 10 feet below the surface of the many lakes and ponds on the island. The offspring of the year were few in number and were dying of starvation, being unable to feed in the deeper water. The succeeding winter it was reported that all the moose not swimming ashore or crossing on the ice died of starvation.

A similar condition arose on Grand Island, on the south shore of Lake Superior, where many years ago some 14,000 acres were turned into a game refuge. Starting with several hundred native white-tailed deer, a dozen imported elk, and a few moose, the deer soon increased to over 3,000, the elk to 250, and the moose to a lesser number. Finally the elk began dying of starvation and in three years they disappeared, and the moose likewise.

It was then necessary to feed this large herd of deer, and as this was difficult and expensive, an open season on bucks, under the state law, was tried. This did no good, for the annual increase was not affected. Thereupon hundreds of these deer, does so far as possible, were shipped for breeding purposes to other states. By death, or by a lessened fecundity through starvation, or by transportation, the deer herd was reduced to about 1,500, and these have to be fed during the greater part of the winter.

As illustrating how the same conditions may arise with a few animals on a smaller tract, Presque Isle Park, at Marquette, Michigan, may be cited. Here for a number of years wild deer from the main shore had access to the heavily wooded portion of the park and were given protection against shooting. For many years it was unnecessary to feed these animals. When they had increased to 50 it was found that they had destroyed all the shrubbery and ground vegetation, besides stripping the surviving trees as far as they could reach. The forest floor is absolutely bare, as though swept by fire, and now they must be fed every day in the year. If this herd were now reduced to two or three animals, it is doubtful whether



Photograph by George Shiras, 3d

TREES ON GRAND ISLAND STRIPPED OF ALL LOWER LIMBS

Only grass, which is not eaten, remains. Flashlight picture of a doe.

they could survive without support.

When one recalls that millions of human beings die each decade through the failure of local crops, how much more readily will this tragedy come to helpless animals imprisoned in a limited area, if no steps are taken by their human custodians to curtail the annual increase by some well-defined program of relief well in advance of the inevitable period of starvation, so well exemplified and attested by the case of the Grand Island refuge on the shores of Lake Superior.

Studies Drought and Soil Erosion in South Africa

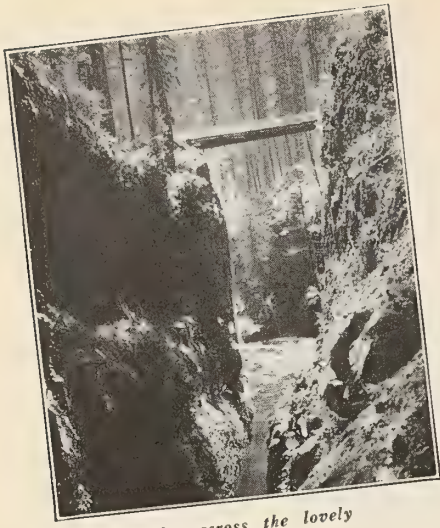
R. J. VAN REENEN, a graduate of the Department of Civil Engineering at Lehigh University and now an engineer of reputation in South Africa, writes from Bloemfontein that he is engaged on behalf of the local administrator in studying the questions of drought and soil erosion. He asks for any aid his fellow-conservationists and engineers in the United States can give him by way of information as to conditions and remedies here. He will be grateful for copies of pamphlets or published discussions, or articles, or references, to publications which

he can procure, and any aid so tendered, if mailed to Dr. Henry S. Drinker, Merion Station, Montgomery County, Pennsylvania, will be duly acknowledged and forwarded. Members of the American Forestry Association are urged to give their aid in this inquiry, which is worthy of all possible attention.

Dr. Drinker is in communication with the U. S. Government departments and bureaus which have jurisdiction in these matters, and is in receipt of much valuable information from them for Mr. Van Reenen.

The Rangers' Trail

By A. G. JACKSON



"A bridge across the lovely canyon walls"



"A tunnel leads the trail around behind"



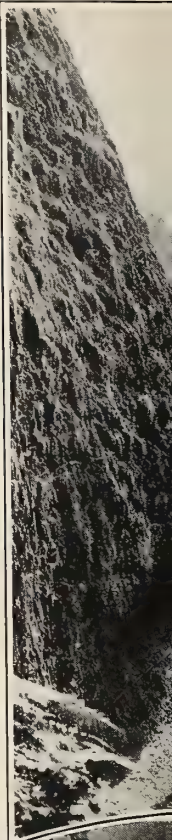
"A rock-faced archway spans the surging stream"

THERE is a lure about the word trail that appeals irresistibly to the person who has tasted the tang of even a few days of life in the open. Trail means to each some particular mountain path that leads from the hectic life of busy centers to the quiet restfulness of the deep forest or the mystery-boding silence of wide spaces.

Trail, to me, means the Eagle Creek Trail, on the Oregon National Forest, fourteen miles of wonderland in the very heart of the Cascade Range, opened up for the enjoyment of the traveler by a way cut through the forest, clinging in places to the sheer faces of the cliffs which form the sides of Eagle Creek Canyon, climbing by a long switchback up through an old burn to swing around the point of the ridge and into the grateful shade of the Douglas fir timber again. Ever onward up the canyon it pushes, finding a way through all the obstacles that intervene, until the blue waters of Wahtum Lake, rippling in the sunshine, mark the end of the rangers' trail by the singing stream.

Long before the eyes of white man had gazed upon its charms, Wahtum Lake reflected the blue of heaven and the green of earth, blending the two into a wonderful shade in its limpid depth. Redmen hunted the deer in the green mountains about it and fished in its sparkling waters. It remained for the forest rangers to carve a trail up the canyon and open the door of this beauty spot to lovers of mountains, forests, lakes, and waterfalls.

The best way to find Eagle Creek Trail is to leave Portland over the matchless Columbia River Highway, drive out past the Vista House at Crown Point and the magnificent series of waterfalls—Latourell, Waukehnah, Multnomah, and Horsetail—and the other scenic wonders which make a trip over this famous highway so very much worth while, until a mile beyond Bonneville you swing down a little hill and cross the rock-faced arch which carries the highway over Eagle Creek. Camping spots, with fireplaces, running water, tables, and benches, on both sides of the way, invite you to enjoy the hospitality of Eagle Creek Forest Camp.



"To sky above
The canyon's
With eager"

the Singing Stream

You may park your car in the specially provided parking place or drive directly to some attractive site on the loop road which winds around through the grounds and make your camp there.

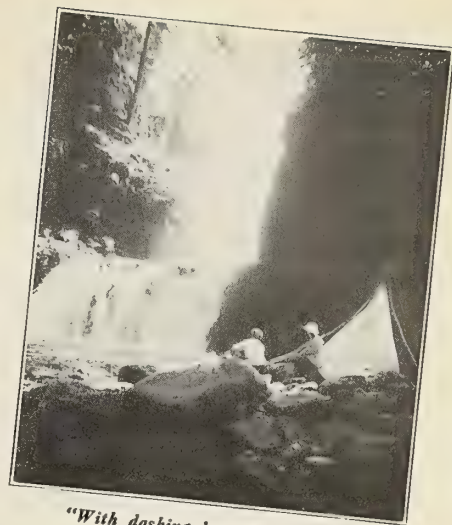
It is best to leave your car on the parking ground, where it will be perfectly safe, for cars stop there each season by tens of thousands without being molested. There are plenty of good eating places along the highway, but when you take the Eagle Creek Trail trip you must take your "eats" with you. You should also carry a blanket and a camera if you want the complete experience of the trail trip. There are shelters along the trail with stone fireplaces built for your comfort. You may stop at any one of these, cook your meal, and, if it is nightfall, roll up in your blanket sheltered on three sides and overhead, and, if you need it, with a friendly little fire on the open side. As for your camera, you will find almost constant use for it on your way up the trail.

We will leave the Forest Camp, with its alder grove and complete line of conveniences for the tourist, and incidentally the crowd of tourists who are enjoying it, and make our way up the canyon. The trail slips quietly away from the Camp Ground and soon takes us into the seclusion of the woods, with the singing stream of Eagle Creek flowing at the bottom of the valley.

After a space through the restful woods the trail emerges from the shade. Soon we find ourselves crossing the face of the cliffs in a passageway that has been blown out of the rock three hundred feet above the stream.

*"To sky above and singing stream below
The canyon's rugged walls appear to go."*

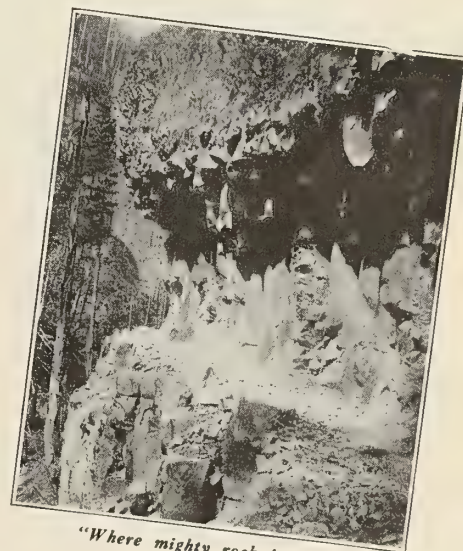
From the trail we look down upon the tops of tall hemlocks, western red cedar, and Douglas firs growing beside the stream, the lighter green foliage of the cedar conspicuous in the sunshine. There are some moss-covered rocks beside the trail now, as it leaves the cliffs and pushes through the brush and woodland on into the real forest again. A hundred-foot-long side trail, marked by a neat sign, leads us to the very brink of the canyon, at the exact point where is obtained the finest view of Metlako Falls, as it makes its 115-foot leap into the stream bed below.



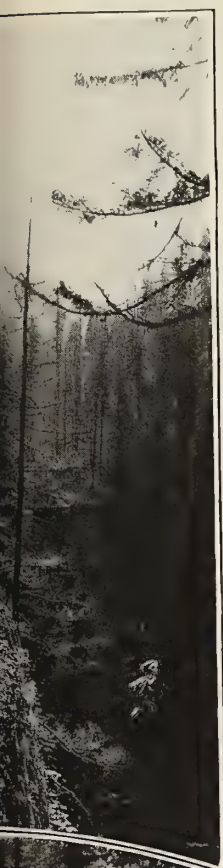
"With dashing leaps, the surging stream springs down"



"Clad in its flying spray—a gauzy gown"



"Where mighty rock impends"



*"Singing stream below
walls appear to go"
fisher casts his fly"*

The Rangers' Trail by the Singing Stream

By A. G. JACKSON

THERE is a lure about the word trail that appeals irresistibly to the person who has tasted the tang of even a few days of life in the open. Trail means to each some particular mountain path that leads from the hectic life of busy centers to the quiet restfulness of the deep forest or the mystery-boding silence of wide spaces.

Trail, to me, means the Eagle Creek Trail, on the Oregon National Forest, fourteen miles of wonderland in the very heart of the Cascade Range, opened up for the enjoyment of the traveler by a way cut through the forest, clinging in places to the sheer faces of the cliffs which form the sides of Eagle Creek Canyon, climbing by a long switchback up through an old burn to swing around the point of the ridge and into the grateful shade of the Douglas fir timber again. Ever onward up the canyon it pushes, finding a way through all the obstacles that intervene, until the blue waters of Wahtum Lake, rippling in the sunshine, mark the end of the rangers' trail by the singing stream.

Long before the eyes of white man had gazed upon its charms, Wahtum Lake reflected the blue of heaven and the green of earth, blending the two into a wonderful shade in its limpid depth. Redmen hunted the deer in the green mountains about it and fished in its sparkling waters. It remained for the forest rangers to carve a trail up the canyon and open the door of this beauty spot to lovers of mountains, forests, lakes, and waterfalls.

The best way to find Eagle Creek Trail is to leave Portland over the matchless Columbia River Highway, drive out past the Vista House at Crown Point and the magnificent series of waterfalls—Latourell, Waukehnah, Multnomah, and Horsetail—and the other scenic wonders which make a trip over this famous highway so very much worth while, until a mile beyond Bonneville you swing down a little hill and cross the rock-faced arch which carries the highway over Eagle Creek. Camping spots, with fireplaces, running water, tables, and benches, on both sides of the way, invite you to enjoy the hospitality of Eagle Creek Forest Camp.

You may park your car in the specially provided parking place or drive directly to some attractive site on the loop road which winds around through the grounds and make your camp there.

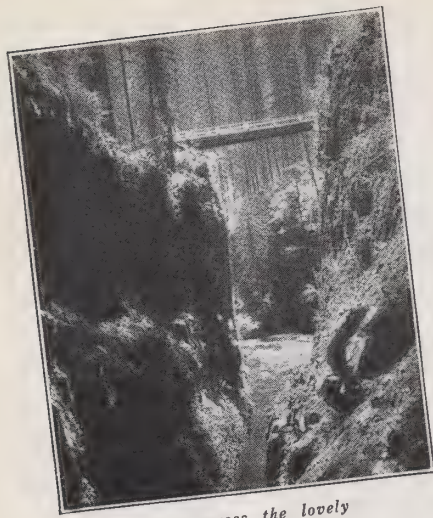
It is best to leave your car on the parking ground, where it will be perfectly safe, for cars stop there each season by tens of thousands without being molested. There are plenty of good eating places along the highway, but when you take the Eagle Creek Trail trip you must take your "eats" with you. You should also carry a blanket and a camera if you want the complete experience of the trail trip. There are shelters along the trail with stone fireplaces built for your comfort. You may stop at any one of these, cook your meal, and, if it is nightfall, roll up in your blanket sheltered on three sides and overhead, and, if you need it, with a friendly little fire on the open side. As for your camera, you will find almost constant use for it on your way up the trail.

We will leave the Forest Camp, with its alder grove and complete line of conveniences for the tourist, and incidentally the crowd of tourists who are enjoying it, and make our way up the canyon. The trail slips quietly away from the Camp Ground and soon takes us into the seclusion of the woods, with the singing stream of Eagle Creek flowing at the bottom of the valley.

After a space through the restful woods the trail emerges from the shade. Soon we find ourselves crossing the face of the cliffs in a passageway that has been blown out of the rock three hundred feet above the stream.

"To sky above and singing stream below
The canyon's rugged walls appear to go."

From the trail we look down upon the tops of tall hemlocks, western red cedar, and Douglas firs growing beside the stream, the lighter green foliage of the cedar conspicuous in the sunshine. There are some moss-covered rocks beside the trail now, as it leaves the cliffs and pushes through the brush and woodland on into the real forest again. A hundred-foot-long side trail, marked by a neat sign, leads us to the very brink of the canyon, at the exact point where is obtained the finest view of Metlako Falls, as it makes its 115-foot leap into the stream bed below.



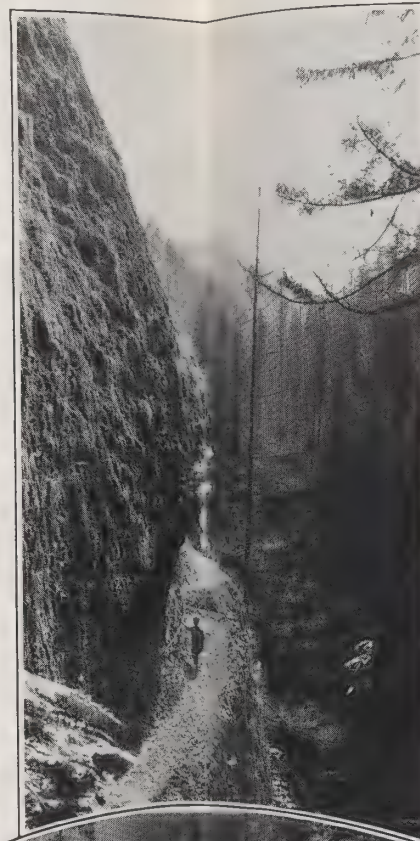
"A bridge across the lovely canyon walls"



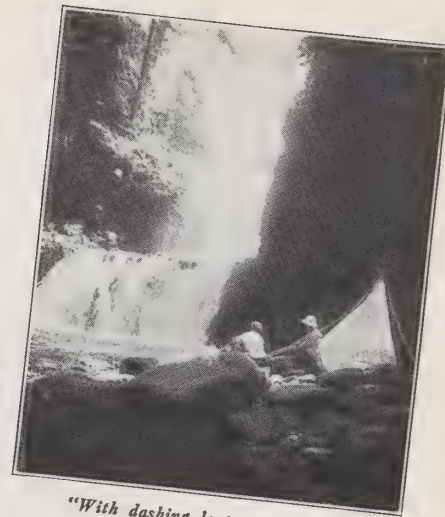
"A tunnel leads the trail around behind"



"A rock-faced archway spans the surging stream"



"To sky above and singing stream below
The canyon's rugged walls appear to go"
"With eagerness the fisher casts his fly"



"With dashing leaps, the surging stream springs down"



"Clad in its flying spray—a gauzy gown"



"Where mighty rock impends"

Many kinds of trees and shrubs are seen along the trail. Besides the alder, western hemlock, cedar, and Douglas fir, already mentioned, we shall see before reaching the trail's end, the true firs—white, silver and noble, western yew, mountain hemlock, western white pine, lodgepole pine, the Oregon maple, and the vine maple, with its green bark and leaves that take on their autumn colors early in the season. The nut trees are represented by the chinquapin, the hazel, and the scrub oak. The more conspicuous of the smaller shrubs are the rhododendron, elder, red huckleberry, red flowering currant, salal, and Oregon grape.

At the Punch Bowl, two and a half miles from the highway, Eagle Creek has patiently ground out a deep hole in the rock, which is still enlarging under the action of the falling water. The Punch Bowl, with its side walls draped with dripping maiden-hair fern and its dark, mysterious depths, which the sunshine never illumines, attracts more admirers than any other one feature along the Eagle Creek Trail. It would be difficult to estimate how many miles of film, both still and motion, have been exposed by amateur and professional photographers in their efforts to catch the rare beauty of the spot. Turn aside a moment at the Punch Bowl and peer into its dark swirls from above; then climb down and enjoy the wonderful view of the canyon and falls. Do not stop long, however, for there is much more to see on this wonder trail which the forest rangers have built.

Push on to where the trail fairly crawls along the rim of a box canyon and finally crosses Eagle Creek on a bridge a hundred feet above the water.

Just above the high bridge we hear the music of Rainbow Falls, which is in reality a double fall, one above the other, whose spray has a rainbow hidden in its depths, which gleams out whenever the sun shines upon it.

"With dashing leaps the singing stream springs down,
Clad in its flying spray—a gauzy gown."

At the long bridge we cross the stream again, this time close to the surface of the water. Along the trail are a number of waterfalls in the side streams, hurrying and tumbling along in their eager haste to join the singing stream itself.

Forest fires, which respect neither the value nor the beauty of the forests, have left their scars to mar the beauty and charm of Eagle Creek. For several miles the trail traverses a burn, with its bleaching white trunks and absence of large living trees. But even here Nature is steadily at work reclothing the fire-formed waste into a green forest again.



BOY SCOUTS HAVING THE TIME OF THEIR LIFE AT WAHTUM LAKE, TRAIL'S END AND THE SOURCE OF THE SINGING STREAM

Before the coming of the trail, Eagle Creek was an excellent trout stream that seldom failed the fisherman who was hardy enough to brave its rugged region. Since the trail has been opened, the stream has been stocked annually from the Oregon State hatchery at Bonneville, the state supplying the fry and the Forest Service placing them in the water at various points. Because of its easy

accessibility, many sportsmen now visit Eagle Creek, and while they rarely make large catches, it is seldom that a fisherman goes away without catching a few gamy trout from the singing stream. We are pretty sure to see several anglers plying the creek, as we pass along the trail.

Ever climbing higher up the canyon, in spite of steep slopes, rock bluffs, and deep canyons, the trail runs steadily on, here clinging to the precipitous



A FINE PLACE TO STOP IS EAGLE CREEK FOREST CAMP, WITH ITS HOSPITABLE TABLES AND BENCHES FOR THE ACCOMMODATION OF THE TOURIST

cliffs with a guard-rail on the inside for the timid traveler, there passing under a huge rock which threatens to crush the tourist as he goes along. The crossing of the East Fork of Eagle Creek is unique. The trail follows a groove cut in the solid rock to the head of a box canyon where a waterfall a hundred and fifty feet high plunges in from the canyon's top. Midway between the top and bottom of this fall the trail comes along and passes behind the

[Continued on page 699]

Federal Aid for Our Wild Fowl

BY JUDGE LEE MILES



THE LAST PASSENGER PIGEON

AT THE last session of Congress Senator New, of Indiana, now Postmaster General, introduced a bill in the Senate, known as the Public Shooting Ground-Game Refuge Bill, providing, among other things, a license to shoot migratory birds. The purpose of the license was to accumulate a fund to acquire sites for resting, feeding, and breeding places for the migratory birds; also shooting grounds for the public. This bill passed the Senate, but was defeated in the House by a few votes. Effective arguments used against the passage of the bill by members of Congress were that it was in contravention of states' rights, reserved to the people of the states by amendment number 10 of the Constitution of the United States.

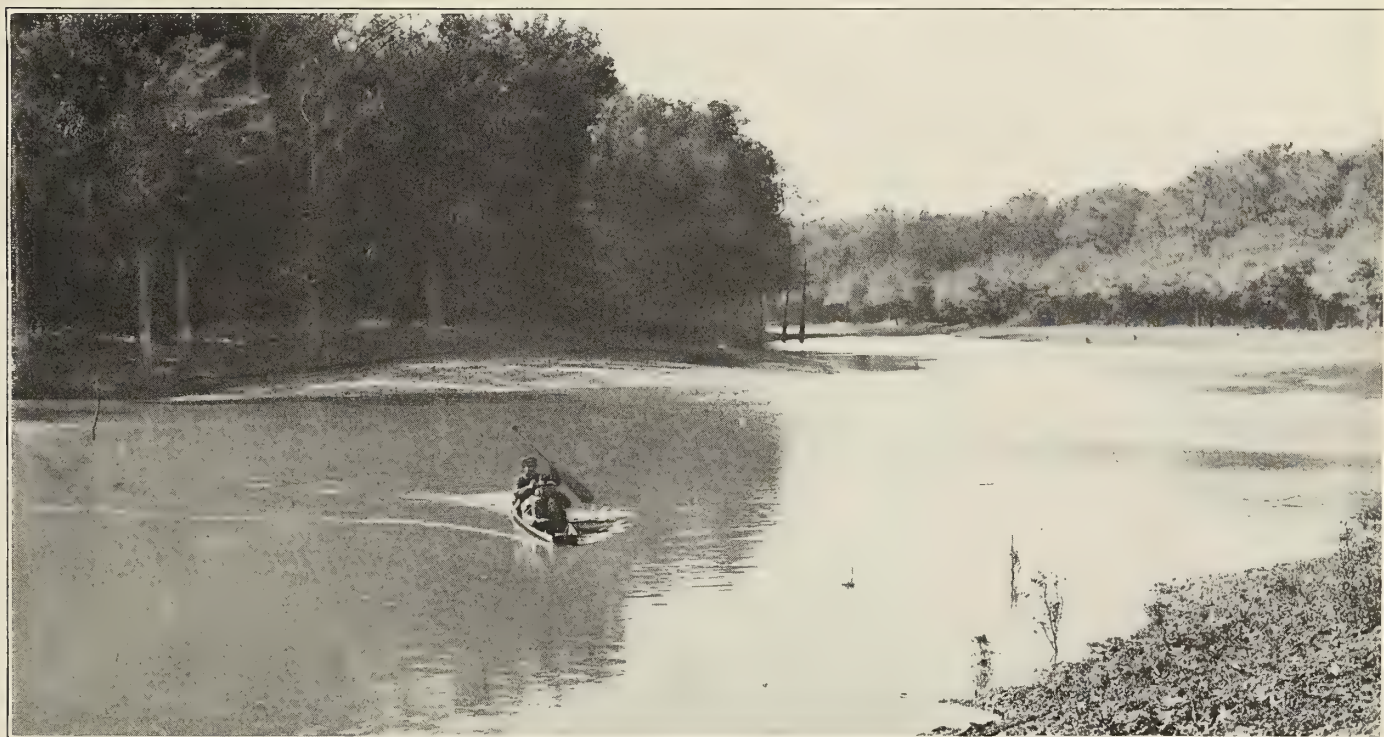
A measure with similar provisions will be proposed at the next Congress through the efforts of scientists, agriculturists, and sportsmen, who have studied the needs of such a law and benefits to be derived therefrom.

Is there need for such a federal law, and does it conflict with states' rights?

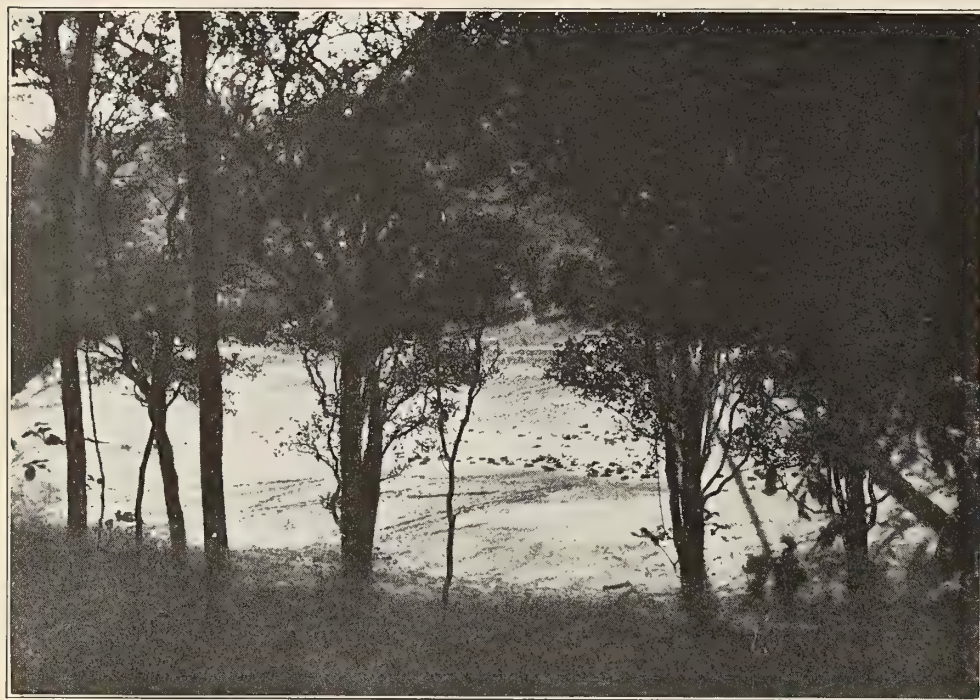
In order better to determine the correct answer to the above questions, it is necessary to understand something of the habits of migratory birds. They nest mostly in the

far North, largely in the Hudson Bay territory, in Canada. At the first blast of winter's breath, they assemble in groups and wing their way along established routes of migration to a more comfortable climate. Many of them make a semi-annual journey to South American shores, far below the Equator. In their flights south they stop for food and rest. Thus, they furnish abundant supply of food and sport for residents of the various states, and at the same time they devour thousands of insects that would, with their multiplied progeny, become pests to crops and forests. Great numbers of these birds spend the entire winter in the United States. In their annual flight, the birds have decreased in numbers because the shooters have increased in numbers and have fitted themselves with more deadly weapons for attack.

Agriculture has drained many ponds, lakes, and other places once their refuge. Forests where they once fed are now in cultivation. At every place they stop for rest and feed they find entrenched the old enemy and find him better armed to diminish their numbers than in the years previous. If some provision is not made to better protect these birds, is it not reasonable to conclude that their diminishing numbers will continue to diminish



RETURNING FROM THE MORNING SHOOT. A CHOICE RENDEZVOUS FOR MANY MIGRATORY BIRDS, FOR WHICH PROTECTION WOULD BE PROVIDED BY THE FEDERAL LEGISLATION NOW PENDING ENACTMENT—LEGISLATION WHICH SHOULD HAVE THE UNQUALIFIED ENDORSEMENT OF EVERY THINKING AMERICAN



THROUGH THE WINDOW OF THE WILLOWS. DUCKS FEEDING AND PLAYING IN A CHOICE LAKE. THE BILL WHICH WILL COME BEFORE THE NEXT CONGRESS PROVIDES FOR THE PURCHASE OF PROTECTION SITES ALONG MIGRATION ROUTES

until these valuable and beautiful birds are entirely exterminated?

If the bill to be proposed at the next Congress is passed, it will provide a fund to purchase or lease sites along the various routes of migration, where these birds will be entirely protected at all seasons of the year, without cost to the Government; also, other suitable sites for the public to shoot and partake in such quantities as to assure the people the presence of these birds every year and in much greater numbers.

Already, the best shooting places from the Canadian border to the southern boundary of the United States have been purchased and are owned by clubs, permitting only club members and their guests to shoot thereon. It is a matter of only a few years until there will be no good shooting grounds available for the man of moderate means, unless the proposed bill passes Congress and through its provisions suitable sites are acquired for him.

The food value of these birds taken every year by the people of the United States amounts to millions of dollars, and that alone demands widespread interest in their protection and preservation.

Recognizing migratory birds to be a proper subject for federal regulation, the United States en-

tered into a treaty with Great Britain providing for closed seasons and other regulations and protection. This treaty was proclaimed by the President of the United States on December 8, 1916. To more effectively carry out the provisions of the treaty between these two countries, July 3, 1918, Congress passed what is known as the "Migratory Bird Treaty Act." This act, together with the authorized regulations of the Secretary of Agriculture, equalizes the hunting privileges of all citizens of the United States. This law and the authority of the President to make the treaty above referred to were held to be constitutional by the Supreme Court of the United States in the case of *State of Missouri vs. Ray P. Holland*, 252 U. S., 416 (decided April 19, 1920).

In the Holland case cited, it was contended that the "Migratory Bird Treaty Act" is unconstitutional because it conflicted with constitutional states' rights reserved to the states by the tenth amendment to the Constitution of the United States. To sustain their argument, they cited the rulings of the district courts in the cases of *United States vs. Shauber*, 214 Fed., 154, and *United States vs. McCullough*, 221 Fed., 288, construing the "Migratory Bird Law" of 1913. It was also contended that, because of the statutory provision, the



A LAKE IN ARKANSAS WHERE MIGRATORY BIRDS COLLECT BY THE THOUSANDS. THE BIRDS IN THE PICTURE ARE DUCKS. DO YOU EVER STOP TO THINK WHO OWNS THESE MIGRATORY FLYERS?

game belongs to the people of the several states in their sovereign capacity, for the benefit of their people; also, that the state had a pecuniary interest therein, and therefore the enactment of the "Migratory Bird Treaty Act" was in contravention of that constitutional right. These same arguments were made by congressmen on the floor of the House against the enactment of the Public Shooting Ground-Game Refuge Bill by Senator New. Most likely these arguments will be repeated when the proposed measure is presented to the next Congress.

In conformity to the treaty provisions, Canada has already acquired vast breeding and feeding grounds, where the birds are protected in their nesting.

Possession only vests title to both migratory and non-migratory birds. While all of the states have a statute vesting title to game and fish in the people, the effect of

for it. If the bird is not taken, he will migrate into another state, and the people of the other state have the same right to hunt for it as the people of the first state, and so on. If we are to follow the doctrine of states' rights, as may be insisted upon, in its application to migratory birds, what would we have? Under this doctrine, if title vested in the bird when it crossed the state line, then according to the same doctrine title would pass out with the bird passing out of the state. The title of the people of the next state into which the bird passed, or over which it passed, as the case may be, would vest and it would also pass out like the title of the people of the state previously.

Birds banded in Canada by the Bureau of Biological Survey have been taken in Ohio, Missouri, Arkansas, Louisiana, and other states. These birds have even been taken in South American countries. Suppose the people



Photograph by P. A. Taverner

"WE DO NOT KNOW WHERE MAMA IS GOIN', BUT WE HAVE NOTHING ELSE TO DO BUT FOLLOW HER." A MALLARD DUCK AND HER NINE CHILDREN. THIS PHOTOGRAPH, MADE AT SHOAL LAKE, MANITOBA, IS A VERY FORCEFUL ILLUSTRATION OF THE DAMAGING EFFECTS OF SPRING SHOOTING AND A LIVING EXAMPLE OF THE DAMAGE DONE WHEN ONE MATING IS DESTROYED

the statute is only to equalize their rights, and that right consists only of an equal privilege to hunt for the game. State courts have ruled, with reference to a general state statutory provision for taking fish, that every individual in a state has an indivisible interest in all of the fish, so long as the fish are in waters where all of the people can fish for them. As soon as these fish get into landlocked lakes or ponds from which there is no ingress or egress, the fish become the property of the individual owner of the lake, and he has a right to take the fish in any way he may desire, regardless of the provision of the statute.

These birds being migratory in their nature, passing from state to state, all persons into whatever state they pass, under the doctrine above announced, have an indivisible right to hunt for them, but title does not pass until the bird is possessed.

When a migratory bird passes over a state line, the state does not possess title to it, but only a right to hunt

of Michigan, under a statute of that state, should claim title to a banded migratory bird when it crossed the Canadian line into the United States, then the same claim could be made by the people of the states of Ohio, Kentucky, Tennessee, and Alabama, under their respective statutes, as the bird passed from one state to the other. We would thus have a continuous controversy over the title of this migratory bird. All of the people of all of the states to which these birds migrate have an indivisible interest therein, and nothing but a federal act can equalize and unify all of the rights of all of the individuals of the United States to migratory birds. Such a federal statute to protect migratory birds would serve the same purpose for them that state statutes serve for the protection of local or non-migratory game. Thus, serving analogous purposes, they do not conflict, and therefore such a federal statute for the protection of migratory birds is constitutional.

Before we had a federal law equalizing the rights of all of the citizens of the United States to hunt and take migratory birds, there was no regulation at all, except state regulations. Some of the states into which the birds migrated offered no protection to migratory birds, but, on the contrary, permitted them to be slaughtered by the thousands and sold and shipped to the markets. These valuable birds cannot be protected from extermination except by the federal measure suggested, or some other similar measure enacted by Congress.

The passenger pigeon at one time existed possibly in greater numbers than any other migratory bird; yet, so far as intelligent inquiry is able to ascertain, there is not one alive today. With reference to the passenger pigeon, it is interesting to note that a bill was introduced in the senate of the legislature of the State of Ohio in 1857, proposing to protect it, and the committee to which the bill was referred made the following report:

"The passenger pigeon needs no protection. Wonderfully prolific, having the vast forests of the north as its breeding grounds, traveling hundreds of miles in search of food, it is here today and elsewhere tomorrow, and no ordinary destruction can lessen them or be missed from the myriads that are yearly produced."

A monument should be erected to perpetuate the memory of the passenger pigeon, and beside it another one to the memory of that Ohio legislator with vision sufficient to see the need of such a measure.

The argument that the Public Shooting Ground-Game Refuge Bill is in contravention of states' rights is sanely

and intelligently disposed of by the opinion of Mr. Justice Holmes in the *Holland* case above cited, in which he said:

"The state, as we have intimated, founds its claim of exclusive authority upon an assertion of title to migratory birds, an assertion that is embodied in statute. No doubt it is true that as between a state and its inhabitants the state may regulate the killing and sale of such birds, but it does not follow that its authority is exclusive of paramount powers. To put the claim of the state upon title is

to lean upon a slender reed. Wild birds are not in the possession of any one, and possession is the beginning of ownership. The whole foundation of the states' rights is the presence within their jurisdiction of birds that yesterday had not arrived, tomorrow may be in another state, and in a week a thousand miles away. If we are to be accurate, we cannot put the case of the state upon higher ground than that the treaty deals with creatures that for the moment are within state

borders, that it must be carried out by officers of the United States within the same territory, and that but for the treaty the state would be free to regulate this subject itself."

Thus we see that the treaty and its subject-matter, *migratory birds*, have been adjudicated by the highest court of the land a proper subject for federal control; also, that the act of Congress regulating the right to hunt, capture, kill, possess, sell, purchase, and ship, as well as other things, is upheld as being lawful and not in conflict with states' rights. Then, by what logical rule could we reason that for Congress to enact the Public Shooting



Photograph by E. A. McIlhenny

COMING INTO A FAVORABLE SPOT TO REST, IN A GREAT BIRD ROOKERY OF SOUTHERN LOUISIANA, AFTER A LONG AND WEARYING FLIGHT



WILD GESE IN FLIGHT. AT THE FIRST BLAST OF WINTER'S BREATH THEY ASSEMBLE IN GROUPS AND WING THEIR WAY ALONG ESTABLISHED ROUTES OF MIGRATION TO A MORE COMFORTABLE CLIMATE

Ground-Game Refuge Bill, requiring a federal hunting license to take birds, of the same subject-matter, and the judicious expenditure thereof, in behalf of all of the people, it would be in conflict with states' rights?

The law proposed will not vest any authority in the Federal Government, or its officers, to interfere with the states' regulation and control over its non-migratory game. Furthermore, the law will not interfere with any state regulation of migratory game birds, except where the state provision conflicts with the federal law. To illustrate: The federal law at this time has a general provision throughout the states of a daily bag limit of twenty-five ducks. Some of the states have a bag limit of fifteen per day. Most of the states, however, have enacted statutes conforming to the same provision as is prescribed by the Migratory Bird Treaty Act. Many of the states require a license now to hunt migratory game birds. The enactment of a federal law to the same effect will not interfere with the state law. Neither will there be any conflict between officers of the state and officers of the Federal Government in enforcing the two acts. The two will work to the mutual advantage of each other in law enforcement.

The subject of migratory birds in the United States is analogous to that of interstate commerce, which must be regulated by federal act. The federal act is not only lawful, but expedient. The Federal Government must pass laws making all such federal regulations for taking migratory birds, fixing bag limits, etc., in order that the privileges will be equal and uniform to all citizens of the United States alike.

It is clear, from the shameful example of the ruthless slaughter of the passenger pigeon, under state protection only, that unless some constructive measure is passed at an early date by the Federal Congress, to reach the end that is here suggested, the time is not far distant when the migratory bird will be less than a memory. The farmer will have lost his most faithful ally in his fight against destructive insects. The American people will have lost a rare and potential food supply, which at the present time is so essential; a pastime that is the sport of kings to the rich and poor alike will have gone forever—all because we, as trustees of an express trust, will have been derelict. Upon us will fall the just censure of not only our children, but our children's children. We will have no argument to offer why we did not meet and sanely and successfully solve the problem.

The Future War for Wood

[Continued from page 669]

tion and propagation of forests on forested areas, along with their more economic exploitation.

So long as the public remains uninformed and indifferent, so long as destructive taxation of forest lands exists, so long as these lands are open to repeated destruction by fire, so long as our country is swayed by unsound and unstable political doctrines, so long as we have unregulated and destructive competition, then just so long will we continue our present ruinous practice.

But as every cloud has its silver lining, so has our forest

situation; for, in spite of all the bad things listed above, our forests are continuing to grow after a fashion, thanks to our good climate and to the Creator, who is ever watching over us. But why not get behind an intelligently directed national forest policy and do our share to protect and wisely preserve this great cornerstone resource, since you and I are two of the one hundred and ten million of us that are to blame for existing conditions?

Estimated Quantity and Value of Timber Removed Annually from Forests of the United States

Kind of material.	Unit of measure.	Quantity.	Approximate value.
Grand total			\$2,232,015,000
Fuel wood	Cords	100,000,000	475,000,000
Lumber, dimension material and sawed ties	M board feet	37,700,000	1,138,917,000
Fencing	No. of posts	900,000,000	225,000,000
Ties, hewed	Number	70,000,000	73,500,000
Pulpwood	Cords	5,000,000	79,750,000
Mine timbers	Cubic feet	293,000,000	56,913,000
Cooperage:			
Tight staves	M staves	350,000	19,250,000
Tight heading	M sets	24,000	12,000,000
Slack staves	M staves	1,200,000	18,000,000
Slack heading	M sets	90,000	10,800,000
Hoops	Thousands	120,000	1,800,000
Shingles	Thousands	9,000,000	37,710,000
Distillation wood	Cords	1,400,000	9,268,000
Veneer logs	M feet log scale	576,000	25,079,000
Tanning extract wood	Cords	1,000,000	10,250,000
Poles	Number	4,250,000	10,625,000
Vehicle stock, woodenware, handles, furniture, etc.	M board feet	200,000	7,288,000
Piling	No. of pieces	1,500,000	6,000,000
Excelsior wood	Cords	200,000	1,800,000
Export logs and hewn timbers	M board feet	100,000	3,445,000
Lath	Thousands	2,000,000	9,620,000
Total			\$2,232,015,000

President Graves Made Provost at Yale

Col. Henry Solon Graves, President of the American Forestry Association, formerly Chief Forester of the United States and now Dean of the Yale Forest School at New Haven, has been elected Provost of Yale University to succeed Wilbur L. Cross, who has served as Acting Provost during the past year.

The honor of this appointment is particularly significant in the light of Colonel Graves' distinguished career in public and academic life. A pioneer of the forestry movement in America, he served as first head of the Yale School of Forestry, and was selected by President Taft in 1910 to succeed Gifford Pinchot as Chief Forester of the United States, from which position he resigned after ten years' service.

During the war Colonel Graves served with distinction in the organization of the woods operations in France, where the Tenth Engineers made its remarkable production record for the American Army, and on his return to civilian life he was designated the first Sterling Professor of Forestry and resumed the position of Dean of the Yale Forest School. In the position of Provost, Dean Graves will be second to the president of the university in administrative rank.

Forest People

THIS column is devoted to stories about real men and women who are doing original, interesting, and worthwhile things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell our readers about them. Manuscripts should not exceed 700 or 800 words, and, if acceptable, will be paid for.

A Lumberman Who Knows His Trees

BY R. D. FORBES

THERE, what did I tell you? I knew the robins couldn't have gotten all of this year's big mast."

In his shirt sleeves, and on his hands and knees in the rank broom sedge that whitens the Louisiana pine woods after the first heavy frost of autumn, a big man, just past middle age, points triumphantly among the parted grass blades before him.

"Look there, and there, and there!" he continues. "The trouble with you fellows is that you don't get down where you can see 'em. A forester ought to have a joint in his back. Haven't you learned that yet?"

Henry E. Hardtner, president of the Urania Lumber Company of Urania, Louisiana, and often called the "Father of Conservation" in Louisiana, looked at me reproachfully. A friend had told him that the robins had eaten up all of the longleaf pine seed that autumn. "Uncle Henry" had been skeptical, and had insisted on our making an examination of some of his cut-over lands. After five minutes' scrutiny of some open spots of ground near a good seed tree, and the finding of a few nipped-off stubs of what appeared to have been seedlings, together with a battered seed wing or two, the rest of us had readily enough agreed that the robins *had* eaten up all the seed and seedlings.

Not so Mr. Hardtner. The result of his scientific skepticism and thoroughness, I have just described. The tall grass about us hid literally millions of seed and seedlings from



HENRY E. HARDTNER, WHOSE FOREST WISDOM HAS EARNED HIM THE TITLE OF THE "FATHER OF CONSERVATION" IN LOUISIANA

bird and man alike. But it took a real observer to find them.

To the public and to those of the forest conservationists who do not know him well, Henry Hardtner is chiefly known as a successful business man who put on the statute books nine-tenths of the fundamental forestry law of his state, who persuaded his fellow-legislators in 1910 to pass the now famous Severance Tax Law of Louisiana (drawn by him solely and simply to finance his forestry program), and who has a fantastic, but somehow plausible idea that he can run his sawmill forever from the timber now growing or to be grown on his 70,000 acres of forest land. But to his intimates in forestry work he is not only that, but much more.

There are today probably no shrewder judges of the value of Southern timberland than Henry E. Hardtner. As a buyer of virgin timber, he has in thirty years built a reputation and a comfortable fortune for himself. But it is as a judge of culled and cut-over timberland that he has shown judgment and business vision verging on genius. When Mr. Hardtner "looks" at a piece of forest land, he sees in it not only present-day values, but the values of the future. Hardwood trees of species then despised he appraised ten or fifteen years ago with the eye of one who is today cutting them into boards worth \$50 a thousand.

Better than that, "Uncle Henry" sees in the scraggly remnants of a culled pine tract not only a fair cut, fifteen years hence, of heart

pine, but a magnificent young growth of fast-growing trees sprung from the seed of the culls of the former stand. Old fields of spindling, astonishingly tall shortleaf and loblolly pines register on his brain not as such (except in present price), but as sawlogs for a mill that will not need to cut them for another fifteen or twenty years. That most baffling of forestry problems, how to keep the sawmills going between the time when the virgin timber plays out and the coming to maturity

of present-day seedlings, has been solved by Mr. Hardtner through his selection and purchase of timber not

growth. That's why I believe in forestry."

Would that America had more students of their forests!



MR. HARDTNER EXAMINES ONE OF HIS BABY LONGLEAF PINES

now merchantable, but which he knows from observation and study will become such in a few years.

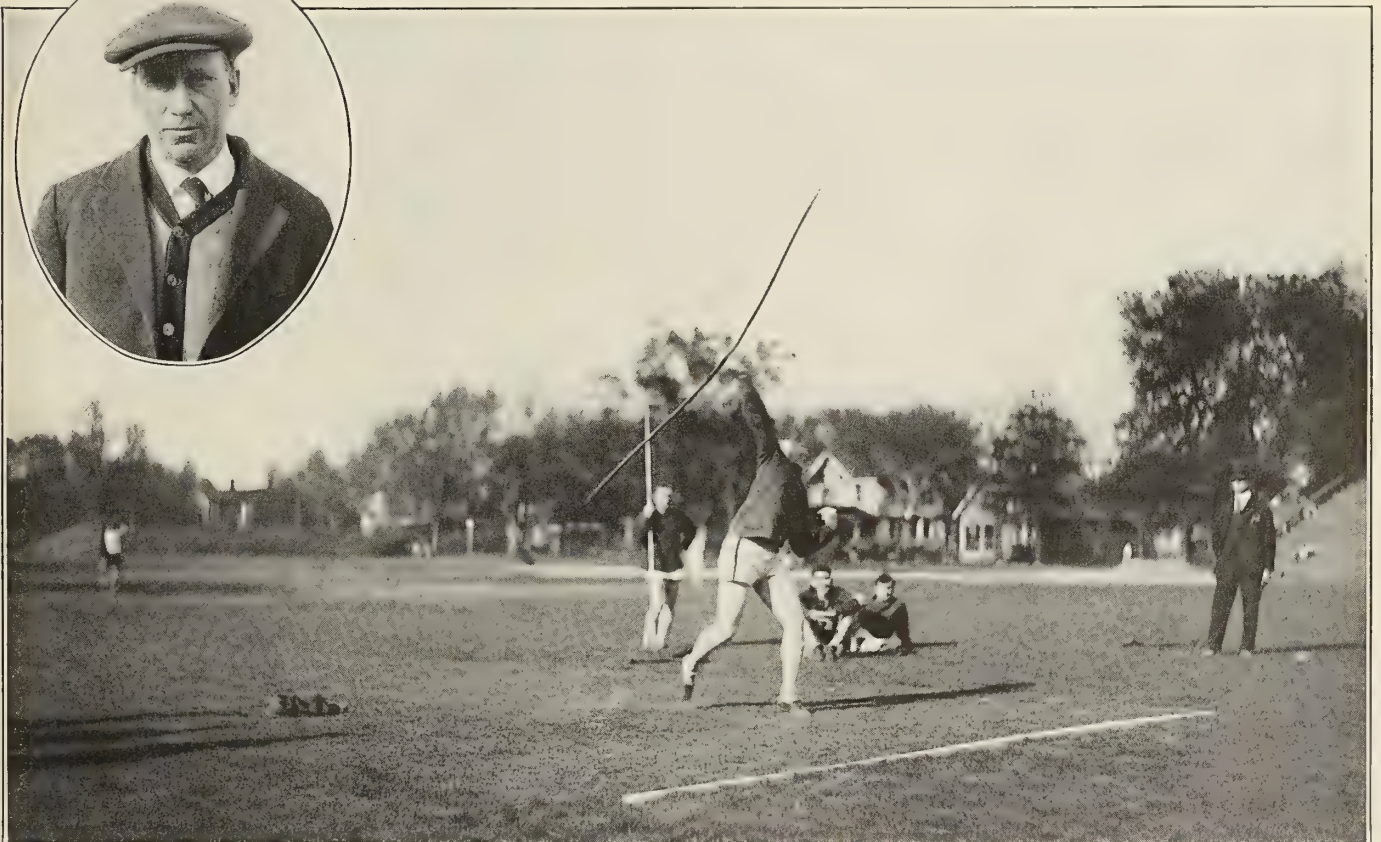
Walking through his beloved woods, Mr. Hardtner sums it all up when he says:

"The best timber investment in the world is right here. I can buy ten or fifteen acres of this for what I pay for a single acre of virgin timber, and when I shall need it, when my real virgin stuff is gone, this will be big enough to saw. I know my timber. I observe and study its

Gill, the Javelin Maker

BY R. B. MILLER

CAN you remember the time when you staggered home on a pair of small, thin-ribbed, stockinged legs, carrying a stack of new high-school books; and how you sat on the front porch at your neighbor's,



ANGIER, OF THE UNIVERSITY OF ILLINOIS, THROWING THE JAVELIN. HIS RECORD IS 203 FEET 9½ INCHES. MADE AT THE DRAKE RELAY CARNIVAL. THE INSET SHOWS COACH GILL, OF THE UNIVERSITY

superiorly studying "Latin," while the neighbor's boy, who was in "Grammar A," kicked his shoes on the steps, whittled, and tried not to appear interested? And the very first sentence you learned was "*Javelina volat*"; and there was a picture of a funny-looking man, standing stiff and muscular, on the right-hand side of the page, preparing to chuck what looked like a cat-o'-nine-tails straight into the first declension, lined up with its profusion of case-endings, beside him. You looked in the back of the book, afterward identified as a "vocabilery," and found that *javelina* was Latin for javelin, and the thing was a weapon used in warfare.

Coach Harry Gill, of Illinois, declined to let the declensions have it all to themselves, so he proceeded to popularize the javelin, and even turned it into a business venture. He has turned out a javelin which is eight feet six and one-half inches in length, and its official weight, including the steel point, is one pound and eight ounces. This graceful weapon he has added to the specialized products used by athletic teams all over the country, as well as its small brother, the discus, which you remember as its *lingua Latinæ* contemporary, though attributed to the Greeks. The factory is located at Urbana, Illinois, and it has an especial branch devoted to manufacturing these wood products as the outcome of an appreciable demand for javelins, developed by Coach Gill. To demonstrate the superiority of his by-products, Coach Gill's personally trained relay team recently broke the world's record.

The javelins are turned out of second-growth ash, 1½ inches square and 8 feet in length. For several years Mr. Gill has sought and selected ash in Indiana and maple in Wisconsin and Ontario during the summer for his special use. He believes that wood near the center of the log is best for this purpose, and should have grown with medium rapidity. The stock is in the form of three-inch plank, and is carefully seasoned for three years before being turned into javelins by special machinery. The excellence of the finished product may be judged by the fact that Milton Angier, of the University of Illinois, hurled one of them 203 feet and 9½ inches, at the recent Drake Relay Carnival, breaking his own and the American record for that event.

The discus, also manufactured, under Coach Gill's personal supervision, by the same company, has as its center or core a piece of hard maple, with a rim of polished steel, and when complete this weighs 4.7 pounds. Baseball bats are also manufactured, being turned out of squares 2⅞ x 2⅞, and are either 30 or 40 inches long.

Large amounts of wood will probably never be required for these special purposes, but it must be carefully selected, seasoned under the most perfect conditions, and be finally passed upon by a specialist who knows the requirements of the finished products.

Wood is, then, the one substance possessing the requisite resiliency of "life" favored by the athlete when he goes in to smash a world's record, or by the league player when he wishes to knock out a home run.

The Mountain of Twenty Thousand Deer

[Continued from page 653]

tion, and limited forage, forces the conclusion that, left uncontrolled, conditions disastrous to these deer will soon develop, involving wholesale starvation and possibly an outbreak of some infectious disease. A careful study of this pressing problem by the Forest Service and Biological Survey suggests the following measures to meet conditions as they exist:

1. The trapping and transporting of deer needed to stock outside ranges. Owing to the fact that this area is about 160 miles from the railroad, with the resulting high cost of trapping and transportation, the number removed for this purpose will probably be small.

2. The issuance, under regulation, of a limited number of licenses for hunting within certain clearly defined parts of the preserve, where the deer are in the habit of concentrating, the areas to be chosen so that the deer will not be disturbed along the Grand Canyon highway, where they are observed by tourists. It is hoped that an im-

mediate beneficial effect of this hunting will be to secure more uniform distribution of deer on the game preserve and promote their emigration northward to other areas not so well stocked. If the killing by regularly licensed hunters fails to remove the surplus, further measures will have to be devised.

The Grand Canyon National Game Preserve, where deer are so prolific and where their utilization may be easily controlled, offers an excellent opportunity to carry out a definite plan that may stand as an example of practical game management on a large scale. It is certain that, properly managed, the deer herd may be maintained in very large numbers and several thousand of them utilized each year.

Experience elsewhere has clearly shown that overutilization of forage by game on limited areas may become suddenly disastrous—a result that should be foreseen several years in advance.

EDITOR'S NOTE.—The views of the authors in the foregoing article, The Mountain of Twenty Thousand Deer, with respect to the urgency of controlling further increase of deer on the Grand Canyon National Game Preserve do not necessarily represent those of the American Forestry Association. In an early number AMERICAN FORESTRY will publish an article presenting the views of many who seriously question the wisdom of action along the lines proposed. Because of the great public interest in this question, it is felt that readers of AMERICAN FORESTRY are entitled to a full discussion of opposing views.

Committee Urges Forest Legislation

*Report of Forestry Committee of the National Chamber of Commerce Is Finally Issued
with Specific Recommendations for Action. Comments on Report*

THE long-expected report of the Committee on National Forestry Policy, appointed by the Chamber of Commerce of the United States, has been issued.

It is accompanied by eight specific recommendations, upon which the National Chamber has circulated a referendum ballot, to be voted by qualified organizations not later than November 17, 1923.

This report and the authorized referendum is the result of about two years' consideration by the National Chamber of Commerce. The referendum was formally proposed in 1921 by associations of lumber manufacturers and paper manufacturers, who united in asking that the Chamber use its procedure for the purpose of arriving at a national forestry policy.

Conforming to the requirements of the National Chamber's by-laws, the board of directors appointed a committee to consider the elements which in their opinion should be included in such a policy. This committee traveled extensively throughout the country and both through personal observation and formal testimony secured evidence and arguments bearing on all phases of the problem. Obviously the report, which is now available, is of deep and nation-wide interest.

From a purely commercial standpoint, it would have been difficult to select a more powerful committee.

Appointed at the request of associations of lumber manufacturers and paper manufacturers, it was natural that such interests should be prominent in the personnel selected. According to the printed report, six of the mem-

bers are manufacturers by occupation, one is the secretary-treasurer of an association of paper and pulp manufacturers, one a lawyer, one an educator, and one a banker.

The majority of them are widely known and are deeply interested in public affairs, and many of them have previously shown an especial interest in forestry and allied subjects.

Of the eight proposals submitted by the committee for referendum vote, numbers III, VI, VII, and VIII will undoubtedly meet with universal endorsement. Similar proposals have previously appeared in other forestry programs which have been presented for public discussion, all of them in some programs, and some of them in all programs.

Nos. VI, VII, and VIII have never been objected to excepting on the grounds of expense. Otherwise these three proposals are unsailable. No. III is broadly worded and has usually been accepted in principle by all forestry advocates, but some issue has been raised at different times and in very divergent quarters over the application of such legislation which might take objectionable forms. In fact, the form proposed by the committee in its recommendation No. IV will probably not be found to be immune from attack.

Proposal No. V, providing for the creation of a National Forest Council by

an act of Congress, was, strangely enough, the only point upon which the committee was divided. Two members are recorded as opposing the plan. Although apparently innocuous, this section offers opportunity for a sharp

Recommendations of Committee

I. That the Federal Government should, for protection of headwaters of navigable streams and to the extent permitted by existing law, acquire, reseed, and replant waste lands on which reproduction of forest growth cannot be obtained by natural means, with discretion in the Secretary of Agriculture to prefer lands in states which provide at least an equal amount of funds for acquisition of such lands.

II. That states and municipalities should acquire, reseed, and replant the remainder of such waste lands.

III. That Congress should enact new legislation with reference to other classes of timberland, to make provision for co-operation of the Federal Government, state governments, and timber-owners in protection and reproduction of timber.

IV. That such new Federal legislation should condition use of Federal funds upon the state:

Having a forestry or conservation commission.

Formulating a code of forest management acceptable to the Federal Department of Agriculture and aimed to secure continuous forest production, observance of the code to be obtained through voluntary agreements entered into between the proper public authorities and the land or timber-owners of considerable areas within the state;

Maintaining adequate protection of timberlands from fire, with funds coming from state and private sources at least equal to Federal funds used for this purpose;

Basing taxation of growing timber upon the principle of the yield tax, with reasonable uniformity among the states in such taxation.

V. That Congress should create a National Forest Council, to have functions of advice to administrative officials and a membership of nine, one to be the Federal forester and the others to represent views of public, timbermen, and foresters, members of the council to serve without remuneration.

VI. That Congress should provide for a national survey and inventory of forest resources.

VII. That Congress should increase the Federal appropriations available for protection of timberlands against fire.

VIII. That Congress should provide for enlargement of Federal research and experiment in forest products.

COMMITTEE MEMBERSHIP

David L. Goodwillie, *Chairman*, Chicago.

Hugh P. Baker, New York.

Junius H. Browne, New York.

Henry S. Drinker, Merion Station, Pennsylvania.

John Fletcher, Chicago.

W. B. Heinemann, Wausau, Wisconsin.

Charles S. Keith, Kansas City.

F. C. Knapp, Portland, Oregon.

Charles F. Quincy, New York.

Harvey N. Shepard, Boston.

divergence of opinion. Some of the strongest arguments against the plan are not presented in the negative side of the printed reports. Past experience with special Government boards, commissions, and councils, detached from the executive departments, has not been uniformly happy. In fact, the contrary has prevailed to such an extent that the tendency in Federal reorganization has been distinctly in the direction of simplification and consolidation.

A board of such importance, created by special act of Congress, would not supinely submit to its advice not being accepted as authoritative, even though its powers may be purely advisory. Its very creation by Congress would be equivalent to notice to the Department of Agriculture that a new body had been established for its guidance in forestry matters. The natural effect would be to give the council's advice an investiture of authority. This would result in a division of authority and responsibility between the department and the council—a situation likely to lead to confusion, delay, and ineffective administration.

Proposals I, II, and IV are splendid illustrations of the difficulty of so wording a referendum ballot as to secure clear-cut decisions accurately expressing the true opinion of the voters. This same difficulty the Society of American Foresters encountered in its referendum vote on the Snell and Capper bills. This criticism applies with peculiar strength to Proposition No. I. No doubt the committee presents this proposal for the purpose of assisting in remedying the forest conditions of the country. If nothing were now being done along that line, Proposition No. I would be a distinct step in advance. As it happens, however, Proposition No. I, if construed literally, would simply restrain and handicap the acquisition work of the National Forest Reservation Commission under the Weeks Law.

In the first place, it would limit purchases to "waste lands on which reproduction of forest growth cannot be obtained by natural means," and would provide for their being reseeded "to the extent permitted by existing law." It does not advocate an increase in the purchase fund of \$450,000 or in the planting fund of \$125,640 provided by existing law. The 81 million acres of waste forest lands in the United States are not found in a few large bodies. The largest bodies are in the Lake states, where purchases are not permissible under existing law. In the mountains, the headwaters of navigable streams, the waste lands are in stringers and patches, areas of greater or less extent, scattered here and there, intermingled with other lands having more or less reproduction and lands having more or less satisfactory stands of timber.

The limitations of No. I would to a great extent actually prohibit purchases because the boundaries of waste areas do not follow the boundaries of ownership, and owners are not always willing to subdivide along such lines. Its limitations would absolutely prohibit the Government from building up units of practical forest management and administration, since such boundaries do not follow topographic lines.

Furthermore, it would place the Government in the ridiculous position of being prohibited from acquiring

lands with satisfactory stands of young growth, now unprotected, until fire had first come in and decimated them. Assuredly the committee, from the tenor of its very enlightened and sympathetic report, could not have contemplated any such condition. No. I, no doubt, should be construed simply as a special endorsement of the purchase and reseeding of such waste lands by the Government and as in no way negating other desirable or collateral purchases.

Section II is subject to much the same criticism. No doubt what was intended is an endorsement of the acquisition and reforestation by states and communities of forest land now wasted and idle. Taken literally, however, it would place upon states and communities the burden of reforesting innumerable scattered areas which form integral parts of farm woodlots and commercial lumbering operations. The problem of waste forest land is not solely a public problem. The Federal Government, states, counties, and municipalities may acquire and reforest large tracts, but a considerable acreage is intermingled with farm and commercial lumbering operations, and the farmer and lumberman must each do the reseeding and planting necessary to heal the scars in his own holdings.

Furthermore, Proposition No. II, read literally, would prevent the Federal Government from acquiring and reforesting forest lands not on the watersheds of navigable streams. No doubt the committee did not have in mind any such limitation, but merely intended that the Federal Government should go as far as could be done legally, and that other organizations and instrumentalities should assume the rest of the burden. Many good constitutional lawyers believe that it would be entirely constitutional for the Federal Government to purchase forest lands not on the watersheds of navigable streams. Many who have questioned its constitutionality believe that it would be distinctly in the public interest. We take it that the committee did not assume to pass upon the question of constitutionality, but actually favors having the Federal Government go as far as the constitution permits and the public interest demands.

There will be many differences of opinion on the merit of No. IV. Features quite similar to it have appeared in both the Snell Bill and the Clark Bill. Probably the chief criticism directed against it will be aimed at (a) the arbitrary limitation of Federal funds, and (b) absence of authority to enforce the established code of forest management. The proposed prohibition of the use of Federal funds unless the four conditions designated as fundamental were met, would be particularly unfortunate in practical application. Surely it would be unwise for the Federal Government to withhold co-operation with any state in the protection of forests against fire until all four conditions are met.

This applies with special force to the taxation question, which at best will be exceedingly difficult to work out. In some very important forest states the prevailing system of taxation is working no hardship and there is no urgent need of change. Some states must change their

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Looking Back

BY IDA L. WOODS

LIKE many others, I thought that a ranger's life was the only life, and that a ranger's wife would have one long, merry round of romantic trips and thrilling adventures. The lofty peaks, the gorgeous canyons, the timbered basins, and the mountain life in general, which my husband-to-be had so often described, beckoned me to come and live among them. But during eleven and one-half years in the ranks as a ranger's wife I have found the trips and the adventures of a decidedly different nature from those I had pictured.

The day after we were married my ranger husband mounted his saddle horse and rode sixteen miles to the post-office for the mail and to inspect the sale of Government timber, which demanded a good deal of checking up those days. He did not return until late that evening, and I wondered if such was the customary procedure. I very soon learned, through seemingly endless hours, that his absence from home for just one day's duty was of little concern, and that it was more often several days or weeks when I would be left to fight loneliness as best I could, for we were miles from any one, in a very out-of-the-way section of the mountains.

On one occasion, late in the fall of our second year, the men had gone hunting. Baby and I were alone in the house when an unusually heavy wind—and that section of Montana is noted for wind—came down the canyon. It gradually grew stronger and stronger until at 10 o'clock a very heavy gust sent rocks through the two west windows, filling the front room with rocks and sand and sweeping the dishes off the dining-table, which I had left all set, in case the men came back later that

night. Had it not been for the two trappers who had asked for a night's lodging in the barn, and who had become too frightened to stay there longer in the terrible wind, the roof of the house would surely have been torn

off. So when my husband and his hunting companions returned, they found a heavy canvas nailed over one

window, and the barn door, which the wind had torn from its hinges, nailed over the other. Our station was no exception. All the stations on the Forest along the mountains were subject to those terrible Montana winds. There were times when I could not bear the wind, and I

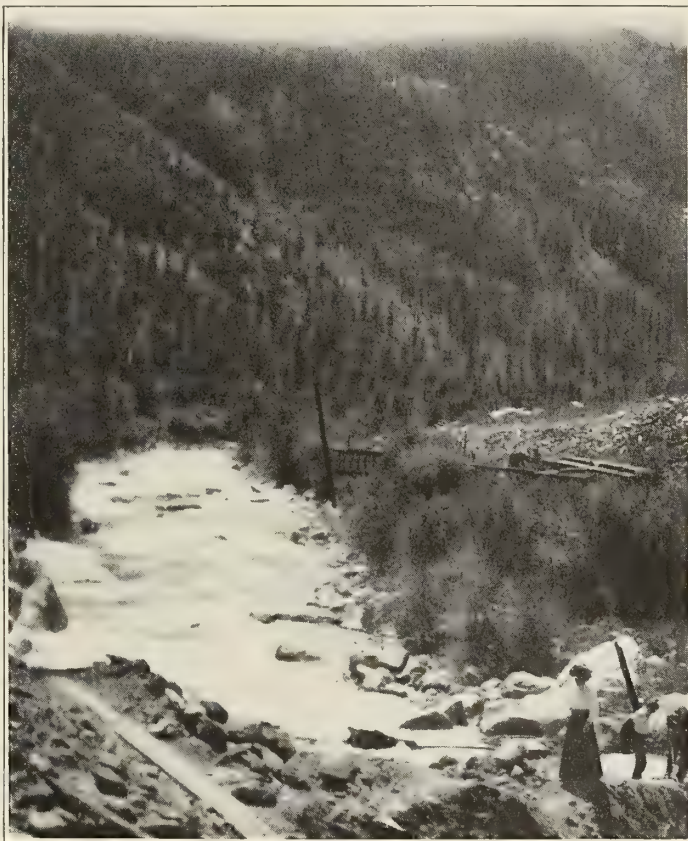
would take the baby and go over to our storeroom, which was partially underground, and spend the hours, sometimes almost a whole day, until the ranger came home.

We put in three winters at that station. The second baby was born there in the dead of winter—32 degrees below zero and thirty-five miles to a doctor. The telephone line had gone out during a storm the night before and it was five miles to the nearest neighbor. If I have ever prayed in my life, it was then. Baby was ten hours old when the doctor and nurse reached the station.

That spring we transferred to the Sun River district, going overland in true prairie-schooner style. The third day on the way a heavy thunderstorm came up, making us all pretty uneasy, as we were several miles from shelter. As we

went around the edge of a lake, lightning striking all around us, the driver of the four-horse team, which transported our worldly belongings, drove too near the edge, miring the wagon, and before my very eyes that load of furniture upset. Such a predicament! Flashing light-

Winner of Fourth Prize in American Forestry's Prize Contest for the best story describing the life of the Forest Ranger's Wife



THAT RAIN CHANGED THE COURSES OF STREAMS, AND AT THE MOUTH OF THE CREEK, WHERE THERE HAD BEEN TEN OR TWELVE FEET OF WATER, AN EXCELLENT FORD WAS CREATED BY THE SILT, SAND, AND ROCKS THAT WASHED DOWN

ning, pouring rain, frightened horses, babies crying with fright, and my cherished possessions scattered in the lake!

The summer camp for the district was established at the Sun River Hot Springs for better administration of grazing and fire prevention, so on July Fourth we started for that place. As a rule, one had to ford the river three times. We had no difficulty in crossing the first

visits to town were few and, as a rule, very far apart. Even now, as I write this, it has been eight months since the children and I were last in town.

One spring it rained so hard that streams of water poured down the mountain sides. The ranger and two guards had gone up the river on telephone work. One guard was married and his wife and her sister were in the old ranger station. As the water kept rising, they waded across the meadow, and we worried together for several days. The telephone line had gone out early in the storm. The suspension bridge swinging eighteen feet above the river, built especially for use in crossing Sun River



THE BRIDGE WAS WASHED AWAY AND THE ROARING WATERS OF THE RIVER TERRIFIED ME, AS I TREMBLINGLY MADE MY WAY ALONG THE NARROW PATH

ford, although the river was quite high and the ford was wide; but when we reached the second ford, which was considered a dangerous one at any time, the men decided to transport our luggage over the high-water trail used by stockmen in driving their cattle to the summer range. So the children and I sat under the wagon while the men packed the horses as a thunder shower was passing over. Everything went on pack-horses, even to a rocking chair and a few chickens. Then we walked and carried the babies. They told me it was only a quarter of a mile over that hill, but I certainly felt as though it was nothing short of two long miles, and the roaring waters of the river at the base of the cliff over which the trail went made me shudder, as I tremblingly made my way along the narrow path, carrying a five months' old baby in my arms.

That summer we ate on granite dishes, drank river water, and bathed in Sun River Hot Springs. These natural hot springs, with the natural cave, afforded us the only bath-room we have ever had since entering the Service.

Here, as at other stations, the telephone was a life-saver indeed, for had it not been for the telephone we rangers' wives along the mountains would not have heard another woman's voice for weeks at a time. Of course, men frequently happened in for meals—stockmen, tourists, or users of the forest, as well as numerous Forest officers—to tell us a little of the outside world. Seldom did we get our mail oftener than once a week, and my



OUR STATION WAS NO EXCEPTION, AS ALL ALONG THE LINE THE RANGERS SUFFERED SEVERE DAMAGES FROM THE HIGH WINDS

during high water, had been swept away and we three women and two babies were marooned on the north side of that river. No one could have come to our assistance, had we been dying, nor could we have gone anywhere, for we were surrounded by high water. The water came rushing down the pipe line and began to cut under the foundation of the house. The trench had not been filled in, and I have vivid recollections of staying out in the pouring rain most of one day shoveling earth to keep the water from taking the foundation from under us.

Weren't we glad to see those drenched men come across the meadow a few days later, and to know that the river had not swallowed them? They had had their troubles, too, having moved camp three times in one night to keep away from the swiftly rising river. That rain changed the courses of streams, and at the mouth of Hannan Creek, where it emptied into Sun River and where there had previously been ten or twelve feet of water, an excellent ford was created by the silt, sand, and rocks that washed down.

From the Lewis and Clark Forest we were transferred to the Helena Forest. We left behind a good deal of the adventure. Life became a sterner struggle. The World War was in progress then, with its ever-increasing demands on every one. Years of sickness followed, and

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EDITORIAL



FORESTS ARE THE MEASURE OF A NATION'S VIGOR

Earthquakes and Lumber Prices

THERE is speculation in some quarters as to what effect, if any, Japan's need for lumber to rebuild its destroyed cities will have upon lumber prices in the United States. That a great amount of lumber will be required for reconstruction in Japan is certain, but the full amount, where it is to be obtained, and the rapidity with which it will be bought are questions as yet unanswerable. Estimates ranging up to five billion board feet have been given as the amount of lumber required to replace the half-million buildings destroyed in Tokyo, Yokohama, and outlying districts. It is probable that the proper figure will fall between three and four billion feet.

That an earthquake occurring on the other side of the world can appreciably affect the price which the farmer in Iowa, the craftsman in Michigan or the professional man in New York has to pay for his building lumber may seem to many a remote possibility. A few years ago students of lumber prices in the United States would have had a difficult task to prove that an earthquake beyond the seas could send even a tremor through lumber prices in this country. Today the case is quite different, because some pretty radical changes have worked themselves into our lumber price fabric within recent years.

One of the most important changes is the increasing dependency of the whole nation upon the forests of the three Pacific coast states, California, Oregon, and Washington. With the exhaustion of forests in the East and the South, the nation has more and more had to draw upon the far West for its lumber. Pacific coast lumber is not at all uncommon today, even in New England, while over six hundred million feet passed through the Panama Canal last year to Atlantic coast terminals. Our Pacific coast states are supplying annually about ten billion board

feet of lumber, or almost one-third the consumption of the entire nation. Probably between four and five billion feet of this production are consumed east of the Rocky Mountains.

What, it may be asked, has all this got to do with lumber prices in this country being set on edge by the earthquake in Japan? Just this, replies the forest economist: the Pacific coast and the South are today our two main and last sources of lumber supply. The productive power of the southern pine forests has fallen off almost one-third in the past decade, but still the competition between these two regions for the lumber markets of the Middle West and the East is quite the strongest factor in holding back the price of lumber. Let a material part of the production of either region be diverted to other markets and this competition becomes measurably lessened and the downward pressure upon lumber prices measurably released. If Japan goes forward with her reconstruction work on a large and rapid scale, electing to buy a large part of the current lumber cut of the west coast at higher prices than the manufacturers are obtaining in the United States, west coast lumber will go Japanward and eastern and middle-western lumber buyers may have to do some lively bidding among themselves to fill their lumber needs, particularly if, as claimed, our southern pine forests can no longer meet the lumber requirements of the East and the Middle West.

In the event that Japan does buy heavily on the Pacific coast and that the demand for building lumber keeps up in this country, it will at least be interesting, if perhaps uncomfortable, to see to what extent, if any, forest exhaustion in the United States has already made our lumber price anatomy sensitive to far-distant events.

California's Lesson

ON SEPTEMBER 17 and 18 California experienced perhaps the most destructive series of fires ever seen in the state. Nearly a hundred thousand acres of forage, brush, and timberland were burned over, in addition to heavy losses in many small towns and cities, some of which were entirely destroyed. Not only was millions of dollars of property destroyed, but other millions of dollars of direct and indirect damage was caused to valuable watersheds, some of which were the source of domestic supplies for such important cities as Oakland, Berkeley, Santa Barbara, and Sacramento.

Practically all of these fires were preventable and practically all were man-caused, carelessness with fire being the chief offender in this as in other similar dis-

asters. Smoking, brushburning, camp fires, and inefficient logging and railroad equipment are given as the causes of these fires. The great conflagration which laid waste a large portion of the beautiful residence section of Berkeley, as shown in the photograph on page 663, is said to be the result of careless smokers in the forest plantations on the hills back of the city. Not until these calamities are brought home to us in such fashion do we really appreciate how greatly fire protection pays.

These fires demonstrate clearly that it does not pay to economize in fire protection when the economy destroys the objective and purpose of the expenditure. Only last January, Governor Richardson, of California, cut the forestry appropriation to a fraction of what it had been be-

fore, necessitating a very great reduction of the state ranger force and reducing materially the fire-fighting funds; but a good showing on paper will not offset the great losses that an organized and efficient force would have prevented, nor will it repair the damages that the

fires have caused. This kind of economy is certainly of doubtful value, for each dollar of paper saving represents a loss of over \$1,000. The old adage of being "penny wise and pound foolish" was never so well illustrated as in the case of California's recent fires.

Vandals of the Highways

THE open road was once an invitation to share in beauty and adventure. The adventure may still be there, but what of the beauty? On the main highways, at least, it has become tarnished by the ghastly growth of billboards and advertising signs of all sorts. Considering the mighty effort we are making to gridiron the continent with a great system of splendid roads; considering, also, the ever-growing multitude that seeks pleasure in motoring and hiking, it is remarkable that we have been so patient of the defilement of our roadsides.

The evil has multiplied a thousandfold in ten years. It is particularly prevalent in the thickly populated regions, where roads furnish one of the chief avenues of pleasure for millions of people. Instead of being free and open trails to the beauties of landscape and engineering skill, these roads are more and more becoming defaced and cluttered with tawdry and ornate advertisements, which invite one to hurry on.

These signs are supposedly put up in the self-interest of the advertiser; but it is questionable if they help the advertiser to sell his goods. There are already many discriminating motorists who revolt at the custom and who go a step further and refuse to buy the advertiser's wares. However much signboards may help or harm

the advertiser, there is no question but they spoil the beauty and charm of the roadside.

A classic example of an unspoiled highway is the Columbia River Road in Oregon. For scores of miles there is practically not a signboard. The road winds through noble forests on the flanks of the river gorge. The road itself is a mere black ribbon, inconspicuous and unobtrusive, like a good servant. Famous among roads, it owes no small part of its popularity to its freedom from defacement by advertising signs. In the National Forests, likewise, roadside advertising is forbidden. Many an unwilling advertiser has been compelled to take down his advertisement in order that the public may see and enjoy the beauty of nature undefiled.

Motorists, hikers, sportsmen, foresters—all out-of-door people—should join hands to outlaw the advertiser's signboard from our highways. Public opinion ought to be so strongly crystallized as to make this form of commercial advertising at the expense of the public's pleasure wholly unprofitable. It is time for the state and Federal highway authorities to consider what steps can be taken to abolish this public nuisance. We are spending millions of dollars on roads. Surely the public has a right to have its investments protected against the commercial greed of the few.

The Woodlot and Bank Credit

NOT long ago President E. H. Thomson, of the Federal Land Bank of Springfield, Massachusetts, outlined some of the problems which confront the bank. He brought out the fact that there are admittedly great changes taking place in the agricultural as well as the industrial life of New England. In the course of these changes the use of the land for growing timber is taking a place of increasing importance.

To illustrate his problem, President Thomson told in some detail of an 800-acre farm in Massachusetts which is particularly adapted to the maintenance of a dairy business and has supported several generations of prosperous farmers. Transportation, labor, and marketing conditions have so changed during the past generation that any type of farming on this particular property is now a precarious business. And this is typical of many other farms in the same section. The present owner applied to the Federal Land Bank for a loan amounting to \$10 per acre. From the standpoint of the bank, the granting of this loan was based upon the question as to how this loan would be paid. Neither the land nor the buildings are valuable except as

they can be used economically and in a manner in which other people are willing to be interested. After a careful appraisal of the farm, attention was centered upon the young timber, which amounted to 800,000 feet of good merchantable pine. That crop alone would pay the mortgage, and upon the basis of it the loan was granted.

In summarizing the situation as it exists on this farm and upon thousands of other New England farms, President Thomson said: "I am confident that the timber and woodland question has been given altogether too little attention in the consideration of New England agriculture. It is the one crop today which will pay off more farm mortgages in some districts than all other crops combined. It is the one farm crop which grows and matures without the aid of man. It is a cash crop on any property that is reasonably well located."

This state of affairs, which is typical of all New England, foreshadows a condition which is developing over the entire eastern half of the United States. The farmer's woodland is assuming a place of importance which ranks with that of the other portions of his farm.

War on the Pine Beetle

How Men and Money Are Fighting to Save Our Western Pine from the Beetle Hordes

By F. P. KEENE

THESE are days of peace in the United States, we are told; and yet wars rage. Everybody is fighting something, be it the high cost of fuel, the low cost of wheat, or just red ants in the pantry. As for the lumbermen and the foresters in the West, this "ant in the pantry" happens to be a beetle in the forest cupboard. As if the annual midsummer battles with timber fires were not enough, this wily trencher has engaged the forest forces in a new line of attack to protect the virgin stands of pine against destruction and waste.

The enemy in this new campaign is the western pine beetle (*Dendroctonus brevicornis* Lec.). The field of its operations extends throughout California, Oregon, Idaho, Montana, British Columbia, and in fact wherever the western yellow-pine timber is grown. The annual casualty list of merchantable yellow pine runs into so many thousands of board feet that the loss figure might easily be mistaken for the German war debt.

If it were a new enemy, the newspapers would herald it with front-page headlines that would make every pine-owner quake in contemplation of the disaster about to befall him; but, being a native-born American pest, with full citizenship papers, its residence in our forests has been taken as a matter of course, an undesirable neighbor but a homesteader nevertheless. Like other undesirable native citizens, we cannot extradite them, much as we might desire to do so, but must make plans to prevent them from causing more than a minimum of damage to our natural resources.

The indictment against this undesirable citizen consists of three charges: First, that he is the greatest single destructive agency operating in our western pine forests today; second, that he kills our highest quality timber—timber which has taken several hundred years to produce and which will never again be duplicated as to quality, in our second-growth stands; third, that he seriously inter-

feres with the complete stocking of our stands, continuously killing thrifty and mature trees singly and in groups, so that the forest never reaches its maximum crop-producing capacity.

The verdict of the jury of lumbermen and foresters familiar with its depredations is that of "guilty" on all three charges, and the sentence which the Bureau of Entomology has rendered is that he and all of his relatives shall be burned on the spot. In this instance, however, it

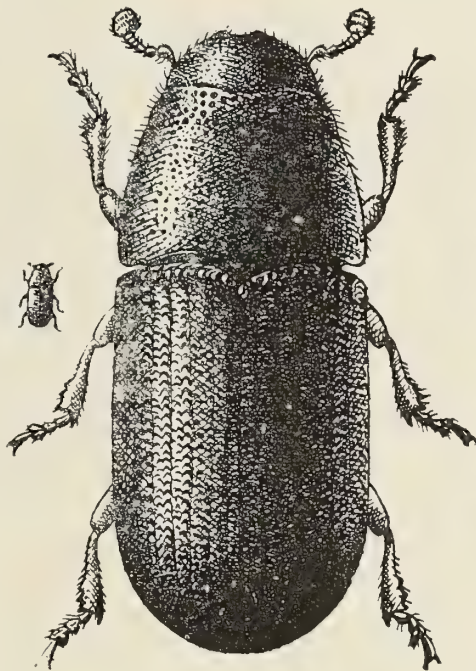
was a case of rendering a verdict and pronouncing sentence before the transgressors were caught and brought before the court of justice. So war on the pine beetle was declared.

The adult pine beetle is a small, dark-brown, cylindrical, rather stout beetle, with a body somewhat smaller than the ordinary housefly. It hardly seems possible that such an insignificant insect could be the cause of so much destruction. His power in this direction comes only through numbers. It takes about two thousand adult beetles to kill an average-sized pine. If a less number than this attempt it, the pine will usually drown them all in its sap and come out victorious and unscathed.

When the stage is all set for battle, a few pioneer beetles, without any apparent reason, select a perfectly healthy-looking yellow pine and start their attack upon it. These scouts are quickly followed by the main forces, the reserves, and shock troops, until the entire main trunk of the

attacked tree is peppered with their entrance burrows.

Upon boring through the thick bark to the cambium layer, they excavate winding egg galleries which cross and recross each other, forming a pattern on the inner surface of the bark which might be considered as the pine beetle's "signature," since it is an unmistakable indication of its work. The eggs, which are laid in little niches along the sides of the galleries, quickly hatch, and the young larvæ, or "worms," burrow into the inner bark and feed on the soft bast, gradually working out into the



THE ADULT PINE BEETLE IS A SMALL, DARK-BROWN, RATHER INSIGNIFICANT-LOOKING BEETLE, WITH A BODY SOMEWHAT SMALLER THAN THE ORDINARY HOUSEFLY

outer bark, where they reach their full growth. On slicing a heavily infested slab of bark, the larvæ appear like so many grains of rice stuck in buckshot holes. In the outer bark, the larvæ transform to pupæ, and then to new adults. These bore out through the bark, fly to attack other trees, and commence the destructive cycle over again.

They are fast and industrious workers—nothing like the slow peach or locust borer. During the summer and early fall, it only takes the beetles three weeks to kill the largest pine tree in the forest. In fact, a tree girdled by their winding egg galleries will fade much more quickly than if it were completely girdled with an ax. Trees attacked during June and July turn out a brood of new beetles in

to the complete wiping out of twenty square miles of pine forest. It was found that on an area of more than a million and a quarter acres, over a billion feet of merchantable yellow pine had been destroyed in the past ten years.

THE BEETLES AWAKEN CONGRESS

Some action to curb this serious loss was imperative. The Oregon legislature was petitioned and passed a law declaring the beetles a public nuisance, thus making possible co-operation in their eradication, providing owners of 60 per cent of the timbered acreage petitioned the State Forester to have the work done. A similar law



Photograph by F. P. Keene

A BIRD'S-EYE VIEW OF A PART OF THE TROUT CREEK UNIT, WHICH IS ONE OF THE FORTY-SIX UNITS INCLUDED IN THE SOUTHERN OREGON-NORTHERN CALIFORNIA PINE BEETLE CONTROL PROJECT

August and September. These new beetles attack and kill trees during September and October, in which they and their progeny spend the winter. Thus two series of trees are killed annually.

Ordinarily an annual loss of less than one half of one per cent of the stand is inconspicuous, but when the beetles become epidemic and kill in a single year as high as 4 per cent of the stand in certain localities, the loss is very apparent to any one. Whole hillsides appear red with the dying trees, as though swept by fire.

It was such a loss as this that attracted the attention of the timber-owners in southern Oregon during 1919, 1920, and 1921. Cruises and estimates made by the Bureau of Entomology and the Forest Service in 1921 showed that the loss of the previous year amounted to 117,000,000 board feet, valued at more than \$350,000, or a loss which if concentrated into one block would have been equivalent

has recently been enacted in California, and other states are considering following Oregon's lead.

The matter was brought to the attention of Congress through the Secretary of Agriculture and the Secretary of the Interior. In December, 1921, Congress appropriated \$150,000 for the work on Federal lands and for the entomological supervision. The private timber-owners agreed to spend a like amount, if necessary, in the protection of their timber.

In order to standardize the control work, a co-operative project was organized, which is now known as the "Southern Oregon-Northern California Pine Beetle Control Project." Under the plan of its organization, the general administrative supervision was vested in a Board of Control composed of representatives of the interested agencies, and the technical supervision was delegated to the Bureau of Entomology, Branch of Forest Insects.



Photograph by F. P. Keene

THIS IS WHAT THE "SPOTTER" FINDS ON CHOPPING INTO A BEETLE-KILLED TREE. THE TREE IS BLAZED AND NUMBERED BY THE SPOTTER, A DATA CARD PLACED IN THE ENVELOPE, AND A RECORD MADE

The infested area of about a million and a quarter acres was divided into three parts or "areas," and the actual control work assigned to the U. S. Forest Service, the U. S. Indian Service, and the Klamath Forest Protective Association, the latter an organization of the private timber-owners, each agreeing to carry out the work according to the approved methods. In the spring of 1922 the real work was inaugurated on this, the largest project ever undertaken in the eradication of the western pine beetle.

Standing on a high peak near the center of the project, which covers an area as large as the State of Delaware, one can look over the rolling mountains and valleys of virgin forest stretching away into the blue distance and still be unable to see the boundaries of the project area. Contemplating such an expanse of country, it seems a preposterous undertaking, utterly beyond the realm of possibility, to rid such a vast forest of millions of tiny bark beetles. And it would be an impossible task if it were not for the fact that the beetles concentrate their attack on single trees and groups of trees, which they kill outright and in which they remain during the fall, winter, and spring. Thus the work can be concentrated in removing these infested trees from the worst areas, and protection is afforded to remaining trees.

Extermination is not possible, nor is it necessary, for

the beetles have many natural enemies, such as birds, disease and predaceous insects, and after a high percentage are destroyed by artificial means, those remaining are put on the defensive against these natural enemies, and therefore are only able to kill a very few trees each year. Thus, artificially, a balance in nature is restored.

Although pine-beetle eradication has been progressing on a small scale for over twenty years in this country, the methods even yet are not widely known. Therefore the first big job consisted in educating the workmen in the technique of the work. Two training camps were started and the "spotters" and camp foremen trained in the methods. Later, the main control camps were opened up in each of the three "areas."

LIFE IN A "BUG" CAMP

Control camps have a "flavor" all their own. Army squad tents awaken memories of the days of 1918. Calked boots and stag shirts, axes, and falling saws suggest a logging camp. Jacob staffs, compasses, and plat books recall timber reconnaissance surveys. Who would guess



Photograph by F. P. Keene

THE FIRST STEP IN TREATING A "BUG" TREE. NOTICE HOW MR. WOODPECKER HAS RIDDLED THE OUTER BARK IN HIS SEARCH FOR THE GRUBS

that these are "bug camps," and that killing beetles is the business involved?

Eighteen men is the usual camp complement, consisting of a camp foreman, a compassman and two spotters, twelve laborers, and most important of all, the camp cook and helper.

There are two parts to the control work: first, the locating of the proper trees to be treated, and then the actual work of destroying the broods.

To a "spotting crew," consisting of two "spotters" and a compassman, is assigned the task of locating and map-

Butterfly nets are not a part of the camp equipment. On the contrary, the main weapons consist of a 6½-foot falling saw, a sledgehammer, wedges, and three 3½-pound swamping axes, with three husky lumberjacks on the handle ends.

The "treating crew," as it is called, locates with the aid of a section map furnished by the compassman, the infested trees which the spotters have marked. The trees, blazed as they are on all sides, can be seen for some distance through the woods, and the data card tacked to the tree, in its manila envelope, tells the treating crew its



Photograph by J. M. Miller

A SLAB OF BARK AND TREE TRUNK SHOWING THE EGG GALLERIES OF THE WESTERN PINE BEETLE. THE PINE BEETLE HAS PLACED THIS "SIGNATURE" ON THE DEATH WARRANTS OF SEVERAL BILLION BOARD FEET OF WESTERN YELLOW-PINE TIMBER IN THE LAST TEN YEARS

ping the infested trees. This work is carried on very systematically. The compassman runs a line and paces the distances, while the spotters work for a distance of three hundred and thirty feet on either side of him, inspecting all of the sickly trees. When a "bug" tree containing live beetle broods is found, the spotter blazes the tree on four sides, fills out a serially numbered card and attaches it to the tree, and the compassman enters the tree on his map. All of the infested area is covered in this thorough manner.

The present method of fighting the pine beetle might be considered as a form of selective logging. The work is laborious, requiring a strong back and the other characteristics that go with it. We were not able to use the two twelve-year-old boys so kindly offered by a fond mother as being "plenty big enough to catch beetles."

story as to the tree's serial number, location, volume, and the general state of its health.

HOW PUNISHMENT IS METED OUT

First of all, the tree is felled, care being taken to place it, if possible, in an opening where the fire will not injure reproduction or other trees. Then the bark is peeled from the upper half of the fallen trunk for as far as it is infested. The cambium layer has been so completely cut, with the winding egg galleries, that it is dead and shrunk, and usually peels away from the sap wood quite readily. Since the pine beetle does not extend its galleries into the limbs, no attempt is made to bark them, and only enough are cut from the trunk to permit access to the bole of the tree for the peeling work. The trunk having been peeled, a fire-line is constructed around the



Photograph by F. P. Keene

SMALL TREES ARE PILED TOGETHER, A FIRE-LINE CONSTRUCTED, AND THE WHOLE MASS BURNED

tree, limbs and brush piled on the log, and the whole mass burned. The heat is so intense that the bark is entirely burned. Small trees burn up completely, but the main trunk of large trees is not injured by this toasting process and can be used for lumber, providing it is removed from the woods within a year or two. Decay in beetle-killed trees is very rapid, regardless of whether they are felled and scorched or are left standing with the bark attached.



Photograph by J. E. Patterson

AFTER THE BARK HAS BEEN PEELED FROM THE UPPER HALF OF THE LOG, A FIRE-LINE IS CONSTRUCTED AROUND THE TREE, AND BRANCHES, BARK, AND NEEDLES ARE BURNED



Photograph by F. P. Keene

THE "SPOTTERS" TAKE A HAND AT PEEING. IN ORDER TO INSURE COMPLETE BURNING OF THE INFESTED BARK, THE UPPER HALF OF THE FALLEN TREE IS PEELED AND THE BARK SLABS PILED ALONG THE SIDE OF THE TREE

During the early spring and late fall, when there is no tendency for fire to spread, the fire-lines are dispensed with and the crews reduced from three to two men, with a lowering of the cost and an increase in efficiency. The average daily "production" for a two-man crew is about four trees or five thousand board feet per day. Records of twenty-five to thirty thousand board feet per crew per day have been made on the project under certain favorable circumstances.

A fully manned camp, during the sixty-day period of spring or fall control work, can "clean up" about twenty-five square miles of forested land. An idea of the size of the control operations on this project can best be gained by a consider-

ation of a few of the outstanding accomplishments.

During 1922 every acre of an area of 225 square miles was covered by the beetle-fighters, and 11,449 dying trees, containing 12,187,790 board feet, found to be heavily infested with pine beetles, were felled and the broods destroyed. This required a labor force of about one hundred and eighty men during six weeks in the spring and about one hundred men for two months in the fall. The total cost, exclusive of the entomological supervision, amounted to \$55,246.19.

During the spring work of 1923 seven camps were put into operation and about



Photograph by F. P. Keene

A TYPICAL GROUP OF TREES KILLED BY THE PINE BEETLE IN A SINGLE YEAR. OUR PINE FORESTS WILL NEVER REACH THEIR MAXIMUM CROP-PRODUCING CAPACITY IF SUCH DESTRUCTION IS ALLOWED TO CONTINUE

one hundred and forty men were employed. The clean-up work was extended into new areas and approximately another ten million board feet of insect-killed timber was

felled and burned. It is expected that with the close of the 1923 season more than two-thirds of the project, or over thirteen hundred square miles of forest, will be placed under control.

WHAT ARE THE RESULTS?

The most important question of all is, "Does it pay?" This question is similar to such questions as, "Does it pay to insure one's house, life, or automobile?" "Does it pay to put out a forest fire?" or, when sick, "Does it pay to call a doctor?" The answer to each question is based upon the probabilities of what might have happened had the contemplated action not been taken.

Assuming, then, that no reduction of the loss would have occurred without control work, preliminary cruises, on the areas worked, indicate that a reduction in the infestation of 72 per cent has been secured; or, in other words, that for every one hundred trees killed in 1921 only twenty-eight were killed in 1922. Even assuming that the value of this timber is only \$3.00 a thousand board feet (which is very conservative), enough timber has been saved in the first year to pay for the cost of the work. The saving in timber during the future years, as long as the effect of control work is noticeable, will be net profit in timber saved.

Through careful watching to detect any increase in the normal infestation of the forest and with the aid of a small amount of control work each year, it will be possible to prevent in the future these heavy insect losses; our mature high quality timber, which is now being destroyed, will be conserved; and our forests will become fully stocked and capable of producing their maximum crop.

With our rapidly diminishing timber supply, the billions of board feet of timber thus saved from insect destruction will represent an investment fully warranted by the protection cost involved.

In our western yellow pine forests, side by side with the placard "Prevent Forest Fires—It Pays," should be hung the slogan, "Beetles Destroy Forest Profits. Control Them! It Pays."

THE BRUSH-BURNER

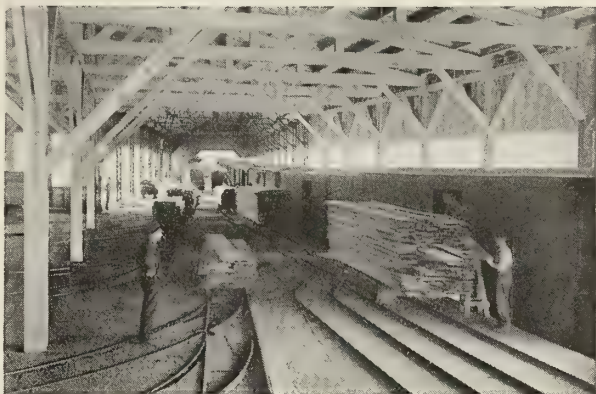
"Many settlers believe that by burning the woods near their farms they can rid themselves of the cotton boll weevil and the cattle tick."—(Extract from official report.)

There wuz an old man who had a little farm,
He alluz said burnin' didn't do no harm.
He burned by night an' he burned by day;
He got so he burned every durned old way.
He burned fer ticks an' he burned fer weevil;
He didn't know—durn him—he wuz so evil.

Then come a time when th' ranger got mad;
He rid up on a hoss an' he pinched old Dad.
With th' bugs in th' cotton an' th' bugs on th' cows,
To hire a lawyer Dad had to sell ten sows.
Th' jury wuz sleepy an' th' judge wuz stern;
Th' fine Dad got give him an awful turn.

Now th' smoke don't rise on Tin-can Creek,
An' no more trouble does old Dad seek.
He dips his cows and he plows his ground;
When fire is a-burnin' Dad makes no sound.
He knows durned well there is a law
Thet's come to stay in Arkansas.

—Charles V. Brereton.



The loading platform at one of the Weyerhaeuser mills. It is such up-to-date facilities as this that enable this group of mills to give efficient handling to orders of any size.



The unit package shed at one of the Weyerhaeuser distributing yards from which emergency shipments can be made on twenty-four hours' notice—an important feature of modern lumber service.

Why So Many Industrial Concerns Are Utilizing Weyerhaeuser Lumber Service

WHEN an old, established lumber organization finds its sales to industrial users increase threefold in a few years, there must be sound fundamental reasons for the growth that are of interest to all wood-using industrial concerns.

Several years ago the Weyerhaeuser organization made a comprehensive survey of the lumber needs of American industries. The results of this survey, coupled with more than sixty years' experience in the lumber business, led to a definite service policy in meeting industrial lumber requirements.

This service has two basic factors:

FIRST—to find the kind and type of lumber and the grade of lumber that will meet a manufacturer's requirements most efficiently and economically.

SECOND—to assure a group of permanent customers a continuous and uniform supply of the exact type of lumber in the correct grade, size and quantities they require.

SUCH a dependable lumber service enables a manufacturer definitely to standardize his lumber practices and factory operation. Continuous production is assured. There is no unnecessary wastage. Handling costs are reduced. In short, the manufacturer is relieved of his lumber worries. The expert in lumber works with his experts to produce maximum results.

Weyerhaeuser sales to industrial users have shown phenomenal increases because Weyerhaeuser service fills a real need—because con-

cerns who have utilized the service find that it pays.

This high type of lumber service is made possible because of the timber resources, specialized equipment and highly trained personnel of the Weyerhaeuser organization:

A large supply of mature timber of fifteen different species, and many types within these species, sufficient for decades of cutting.

Scores of logging camps guaranteeing a steady stream of suitable raw material.

Fifteen complete modern manufacturing units.

Seasoning processes that prepare lumber scientifically for each exacting need.

A crew of men at all the plants, with years of experience in producing, grading and shipping Weyerhaeuser quality lumber.

A corps of salesmen trained to think as purchasing agents and buyers have wished for lumber sellers to think.

Distributing facilities backed by fifteen immense mill stocks and two great strategically located storage plants, in the heart of both the eastern and mid-western markets.

THE Weyerhaeuser Sales Company distributes Weyerhaeuser Forest Products through the established trade channels. Its principal office is in Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 2694 University Ave., St. Paul; and with representatives throughout the country.

The personal service of Weyerhaeuser crating engineers in helping buyers of crating lumber to reduce their packing and shipping costs is outlined in a booklet, "Better Crating," sent free on request.

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Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



ALABAMA PASSES FOREST ACT

By an act passed by the legislature and signed by the Governor on September 28, the State of Alabama becomes the newest state to enact forestry legislation. The new bill provides, among other things, for relief from taxation for land-owners who desire to devote their land to the growing of timber.

Declaring that it is the policy of the state to encourage reforestation of cut-over lands and timber culture generally, the bill provides that "the timber growing on lands which shall hereafter be designated by the State Forestry Commission as Auxiliary State Forests" shall not be taxed or assessed for taxation until the lands are withdrawn as Auxiliary State Forests, and that the land on which the timber grows shall be taxed "as if the ownership of the timber growing thereon had been severed from the ownership of the land."

An owner of cut-over land who desires to take advantage of this act is required to enter into a contract with the state, agreeing that he will devote his land to forest culture, that he will use reasonable diligence to protect it against fire, and that he will not cut, turpentine, or otherwise use the timber before withdrawal, except in accordance with the regulation of the State Forestry Commission. Lands once declared as Auxiliary State Forests cannot be withdrawn for a period of five years, but after that time the owner may withdraw them at his discretion. Upon withdrawal, or when any of the timber is harvested during the status of the land as Auxiliary State Forest, the owner is required to pay as "a privilege tax for the entry and withdrawal of said lands as Auxiliary State Forest, and in lieu of the annual ad valorem tax not assessed against said timber while entered as Auxiliary State Forests, a sum equal to 10 per cent of the value of the timber thereon at the time of its withdrawal." A reading of the bill does not make it clear whether or not the state may, without cause, withdraw lands, once they are declared Auxiliary State Forests.

A special feature of the Alabama bill is a provision which stipulates that all occupation, license, or privilege taxes imposed by the state for engaging in any business dealing with timber or timber products shall be kept in a separate fund, to be known as the State Forestry Fund. This fund is to be used exclusively for the administration of the Forestry Act. The bill creates a State Commission of Forestry, consisting of the Governor, the Commissioner of Conservation, three practical lumbermen "who are owners of timberland and engaged in the manufacture of lumber," and two farmers who are land-owners. The lumbermen and farmer members of the Commission are appointed by the Governor. The duties of the Commission are to investigate forest conditions in Alabama, report annually to the State Legislature the results of its investigations, and recommend necessary legislation with reference to forestry. The Commission is

directed, as soon as possible, to employ a State Forester, "who shall be a technically trained forester, with at least two years' experience in technical and administrative work."

Another important feature of the bill is a section which makes it a misdemeanor for any person or corporation to set fire to timber, brush, or grass lands not their own, or to set fires on their own lands without giving adjacent land-owners five days' written notice in advance. The bill also empowers the Commission to take such measures as may be reasonable to prevent spread of forest fires, and with the approval of the Governor it may draw upon the Forest Reserve Fund in order to provide necessary fire control, either individually or in co-operation with the Federal Government.



A HEDGE OF MANY USES

Mr. E. S. Conser gets his wine from his fences; also his asparagus and some of his peaches and figs. That is because his fences are made of all these in such manner that they apparently help one another make a very ornamental fence. In the spring he gets asparagus, in early summer he gets peaches, and later figs and grapes—all off his fence. And Uncle Sam allows him to make a little wine for his stomach's sake, of course.—*Marta E. Conser.*

LUMBERMEN OFFER PRIZES

As one means of developing closer utilization of wood in the forests and mills, the National Lumber Manufacturers' Association is offering a prize of \$2,000 annually for the best ideas that are developed during the year in the field of waste prevention and closer utilization as related either to logging

or sawmill operations. The prizes will be divided as follows: First prize, \$1,000; second prize, \$500; three prizes of \$100; four prizes of \$50.

"Lumber manufacturers," says the Association's announcement, "have found that the most important ideas come from those closest to the work. For this reason this offer applies only to those actually employed in the lumber industry. A lot of ideas have been developed by employees in the sawmills and logging camps. Many of these ideas have never gone beyond the man who originated them. Many more ideas could be developed if the men in the mills concentrated their thought upon some specific sawmill problem. For this reason the Waste Prevention Committee of the National Lumber Manufacturers' Association decided to suggest problems for solution. These problems will be presented in a series of announcements such as this, which will appear from time to time between now and the end of the year."

Those interested should establish contact with the Engineering Department of the National Lumber Manufacturers' Association, International Building, Washington, D. C.

PRESIDENT COOLIDGE CREATES ALLEGHENY NATIONAL FOREST

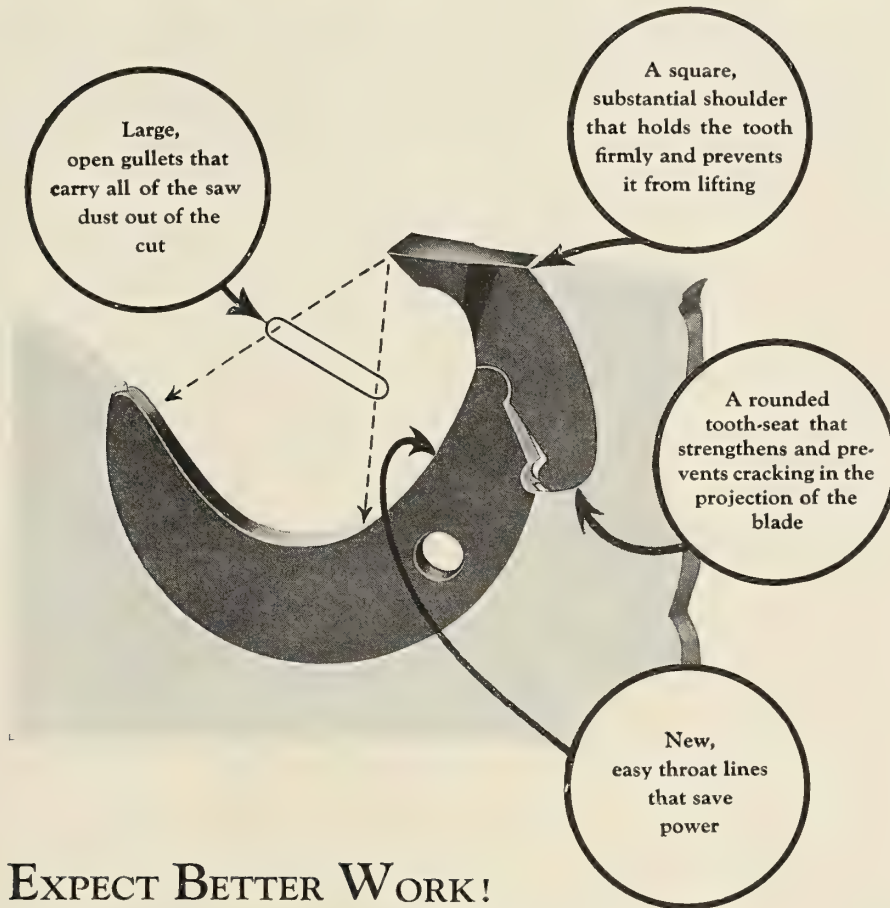
A new National Forest, to be known as the Allegheny, has been created in Pennsylvania pursuant to a presidential proclamation dated September 24. This is the first National Forest to be created during President Coolidge's administration and brings the total number of forests under the supervision of the United States Department of Agriculture up to 146, embracing a total net area of about 157,337,000 acres.

The Allegheny National Forest is also the first forest under federal control to be established in Pennsylvania, although that state has several state forests and has always been one of the foremost states in matters relating to forest conservation, watershed and game protection, and forestry practices.

Unlike the National Forests which were created out of the public domain, this newly created forest is to be built up entirely of lands to be purchased from private owners, and about 100,000 acres are now under purchase agreement. The outside boundaries of the new forest embrace a gross area of about 740,000 acres in Warren, McKean, Forest, and Elk counties. This acreage is situated on the watershed of the Allegheny River, a tributary of the Ohio River and a troublesome factor in the frequently recurring floods which menace navigation, industry, property, and lives in the region centering at Pittsburgh.

The Government's purchase program contemplates the eventual acquisition of all forest lands within the proclaimed area for the primary purpose of affording protection to this section of the Allegheny River drainage.

Better Work



EXPECT BETTER WORK!

Go as far as you like in your anticipation of what this new saw will do. You will not be disappointed. We asked millmen, sawyers and filers what was the utmost they could expect from an inserted tooth saw. They told us various things—more lumber with less power, faster cutting, smoother running, less heating, etc. Then our experts went to work. It took a long time, but they finally got them all—in the Invincible.

We'd like to tell you more about it. If you're interested in saw efficiency, just write us, "Without obligation to me, tell me about your new Invincible Saw," and send your postal or letter to

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Atlanta, Georgia. Established 1897

crying. Some of 'em said he had finished off the bottle of pain-killer, but I don't know. However, Big Andy is equal to the occasion and, rising, delivers a ring-tailed oration of peace on earth, good-will to sheep-herders, and accepts Applegate's offer about the Kid in the name of the whole camp.

"Well, next morning I drifts into Old Man Kelley's store to buy a little tobacco and I gets to mulling over *ex libris* and just who shoved the skids under me. Right there was Nez Perce Polly, with two five-dollar gold pieces on the counter, buying out the store. I looks at those yellow boys and sees that one of 'em had a hole in it.

"'Wherja get 'em?' I asks.

"'Hump,' she grunts, touching one, 'Appergate,' and pointing to the other, the one with the hole in it, 'Slupervisor.'

"It was the coin he'd won from me!

"'Polly,' says I, 'I'll give you another five dollars for the whole truth about the Supervisor, Applegate, the Thunder Mountain Kid, yourself, and those gold pieces.'

War Eagle's War

[Continued from page 648]

"'All right! Tell 'em truth,' she says, and I knew she'd do just that, which she did.

"And so I learned how the Forest Service bids fair to become the great training school for strategists and diplomats. Ten good seeds that lesson cost me, but well worth it!

"Soon Graham comes along, perky as a jay bird.

"'Have a smoke,' says he, pushing out one of Old Man Kelley's cigars.

"'Sure,' I replies; 'you're flush and, like lots of Yankees, you made it corrupting the noble red man.'

"'Well,' says he, not deigning to notice my slurful remarks, 'What do you think of *ex libris* now?'

"I looked them "ology" words of yourn up in Big Andy's dictionary after I figgered how to start spelling 'em, and you sure beat any tin horn in this Upper Country.' Then, remembering them gold pieces and my other injuries, my neck feathers up, I snaps kinder uppity:

"'A feller that bribes a poor old ignorant squaw to tickle an orphan kid's stum-jack, to make it howl like it had colick, and then prescribe ewe's milk as the only cure, and thus put sheep into War Eagle by subsidizing public opinion, that fellow,' says I, 'may be diplomat and strategist, but he'd oughter be corralled by the Society for the Prevention of Cruelty to Children! There is some class to his "libris," but damn his "ologies!"'

"'Ranger,' says he, smiling sweetly, 'if the chapters of that dictionary text-book of yours hadn't been so short, you might have learned that sheep's milk is entirely suited for the growing infant, and howling the greatest exercise in the world for a baby's lungs! But, now that peace dwells once again in our hills, I'd like your assistance in just one more "ology."'

"'What's this one?' I asks, biting again.

"'The Doxology!' says he."

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GARDEN WEEK IN THE SOUTH

The National Garden Association, with which the American Forestry Association is a co-operating organization, has announced a Southern Auxiliary Garden Week from November 1st to 8th. The regular week set aside for the observance of garden planting by the Association is April 20th to 26th, but in view of the fact that the planting season in the South is in the fall, an auxiliary garden week has been set aside for that region. This action was taken at the request of many southern groups and horticultural organizations.

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The Rangers' Trail by the Singing Stream

[Continued from page 674]

falling water through a thirty-foot tunnel.

Not far above the tunnel is a waterfall beside the trail on which, due to the configuration of the rocks, the water seems to flow in every direction except directly back upstream. Eagle Creek is so full of waterfalls that they would become monotonous, were it not for their great variety. A tall, slender fall springs coyly from the rocks here, while its next neighbor may be a short, plump specimen.

We have now covered more than half the distance between Eagle Creek Forest Camp, on the Columbia River Highway, and Wahtum Lake, in the heart of the Cascade Range; so a stop is made at one of the trailside shelters for lunch. A rock fireplace makes a safe spot for a little fire to heat the coffee water and a blackened lard bucket left by an earlier hiker makes a suitable coffee-pot; and, after lunch is finished and the leavings burned up, the same bucket carries water from the creek to carefully extinguish the last spark of our fire, for only the rankest tenderfoot leaves a fire behind him in the woods, unless there is some one with it to take care that it does not escape.

Presently the trail leaves the valley of the west fork of Eagle Creek and follows a long switchback up through the brush and snags of the old burn until finally, at Inspiration Point, it swings around into the green timber of the east fork. Soon the rocky crown of Chinidere Mountain appears on the opposite side of the valley and remains the chief feature of the landscape for a mile or so, when the trail enters a denser part of the forest, through which it winds along, ever onward and upward, until gleaming through the trees we see the blue waters of Wahtum Lake, trail's end and source of the singing stream.

Wahtum Lake is a fitting climax to the scenic charms that put Eagle Creek Trail in a class by itself. Surrounded on all sides by evergreen forests, the lake is a gem set by the Master Craftsman. Its guardian peak is Chinidere, 4,666 feet high. At Wahtum Lake the Portland Council of Boy Scouts of America have established their summer camp, with an immense cabin of noble fir logs as a rallying place. Here during the season the scouts and their leaders gather in installments one hundred and fifty strong for work and play in close contact with Nature. In their whole program of sports there is nothing else as popular with the scouts as the swimming hour at the lake. All their lessons in woodcraft and self-reliance are easily learned in such surroundings.

Passing along the opposite side of the lake to the cosy shelter built by the forest rangers, we will lay down our packs, take

out our fishing tackle, and spend an hour on the lake shore angling and taking in the quiet beauty of the picturesque place. And afterwards, as we sit in our shelter, with a little friendship fire in front, and watch the moon drift silently over the mountains, flooding the forest and lake with its mystic light, we'll be glad that the program of our lives included a trip to Wahtum Lake over the rangers' trail by the singing stream.

[Photographs by the author.]

CULTIVATE YOUR TREES

Trees and shrubs planted in school grounds are often grossly neglected after a carefully planned planting scheme has been followed at considerable expense for the first year, says Prof. R. B. Cruickshank, Department of Horticulture of the Ohio State University. He states that the hopes for the improvement in the appearance of the grounds are sure to be blasted unless some care and attention are given annually to the plantings, and gives the following suggestions. Spade up the shrubbery beds and for about a yard around the trees. Smooth this soil and if possible keep cultivated during the summer. If the latter cannot conveniently be done, mulch the spaded soil with several inches of strawy manure or old straw or hay. This mulch will keep the ground moist and smother the weeds. Manure spaded into the soil or a tablespoon of nitrate of soda or sulfate of ammonia sprinkled under each tree or shrub will stimulate growth remarkably.

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Committee Urges Forest Legislation

[Continued from page 684]

constitutions before they could adopt the proposed yield tax. All of this will require time. No doubt it will take two or three decades to finally work out a uniform equitable system of forest taxation. If, meanwhile, we wait for this before applying cooperative efforts toward fire prevention and other matters essential to forest progress, the situation as to our timber supply will be critical indeed.

Furthermore, such arbitrary limitation may be criticized on the ground that under its provisions a state may avoid doing anything whatever toward forestry betterment, no matter how urgently it may be needed in the Federal interest, by simply failing to meet any one of the four proposed requirements, and the Federal Government is thereby also prohibited from making the slightest effort to improve conditions.

As to the second point, there is little likelihood of Congressmen from non-forest states being willing to appropriate funds for the purpose of establishing a code of proper forest management where there is no binding contract and no penalty provided, but all is simply loosely based upon "observance of the code, to be obtained through voluntary agreements entered into between the proper public authorities and the land or timber owners." Here again many voters will, no doubt, feel that their opinion cannot be accurately expressed by either a "yes" or "no" ballot. However, generally speaking, organizations which favor improving forestry conditions in the United States will vote in favor of this proposition, with mental reservations as to necessary or desirable amendments.

In form and substance the report of the committee is clear, concise, and to the point. Obviously the extent and intensity of the study of the problem is not fairly reflected in the rather meager recommendations. It is particularly to be regretted that the recommendations fail to make any reference whatever to the remaining Government forest lands still unprotected, unreserved, and unmanaged; also, that they make no reference to the forest lands in Indian reservations and the desirability of protecting such lands and managing them from a forest production standpoint.

The "arguments in the negative" show that unusual care and detail have been spent in their preparation. The Chamber's procedure, which includes the arguments of a "devil's advocate" on all questions submitted for referendum, is undoubtedly necessary in fairness to the voters. If any criticism should be made in this case, it would probably be upon the grounds that the "advocate" worked overtime. Even at that, the committee clearly has the best of the argument.

Upon the whole, it is our feeling that the committee has performed a distinct service

to the cause of forestry, and that if the proposals are adopted they will assist materially in securing helpful and desirable legislation.

Saving Forests by Saving Paper

[Continued from page 655]

for the production of newsprint, as well as book paper and paper board.

While 95 per cent of all paper made in the United States is made entirely or in part from wood pulp, there is still a large use of rags in writing papers. The rag market is another phase of the waste-materials industry, and by no means unimportant in the paper industry. A typical year, for instance, saw the consumption of 600,000 tons of rags, for which the paper mills paid nearly twenty-five million dollars.

The Tamed Wild Apache

[Continued from page 659]

Captain Miller tells the story, that orders had been issued by General Grant to General Davidson to make a certain designated movement with his division. As General Davidson saluted his commander, he said, "If I understand this order correctly, it means the sacrifice of my division." With snapping eyes and hard-set face, the great General replied, "I am glad, General, that you *do* understand that order."

How much good or harm the inevitable influx of white visitors may do the Apaches I do not pretend to guess. It may not be amiss to hint, however, that the tepees of the Apaches, crude as they are, are no less their private homes than are the more pretentious houses of the whites, and that it is quite the natural thing that they should resent any unwarranted intrusion. Superstition aside, it is also readily understandable that the Apaches are not enthusiastically in favor of the constant snapping of cameras at their homes and their persons. Those who wish to visit the Apaches in the privacy of their tepees must spend the time necessary to become acquainted to a sufficient extent to have the invitation extended.

While this article does not surround the Apache with much of the glamour of romance, I cannot help but feel that, considering their recent wild freedom, the six hundred and thirty-odd Apaches on the Mes-calero Reservation are doing very well, and that, on his part, Uncle Sam is doing his duty by them nobly. If the "Indian problem" is one of those which admits of no complete and final solution, it is simply that it was never intended by Nature that the red man should be made over into a Caucasian.

And, after all, who are we that we should question the decree of fate?

[Photographs by the author and through the courtesy of the Commercial Club of Alamogordo, New Mexico.]

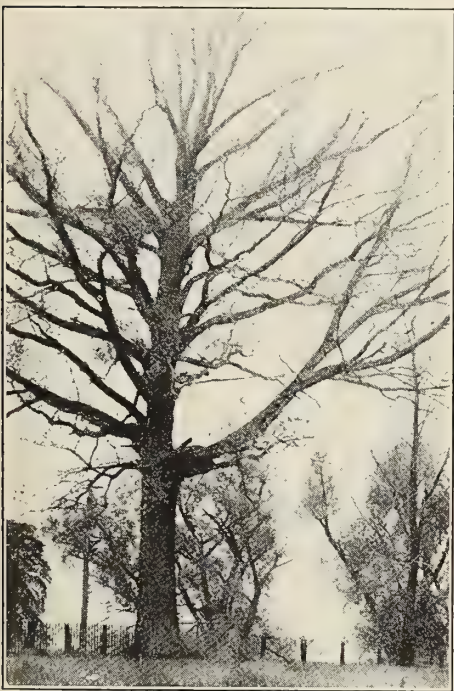
STATE TO PLANT A MILLION TREES

Shipments of trees for the fall planting season were begun from the New York Conservation Commission's nurseries this week, with orders for nearly half a million trees.

Orders for trees began coming in very early this fall and in the first week of the planting season called for more than twice as many trees as were ordered a year ago, indicating a steady growth of the movement for the reforestation of idle land that is better suited to growing trees than to any other purpose.

Thus far this year the output of the Commission's nurseries is close to 7,500,000 trees and the indications are that before the end of the year 10,000,000 trees will be planted.

The Conservation Commission will plant on state land this fall one million trees, bringing the state's contribution to this year's reforestation work up to 1,700,000 trees.



THE CARY OAK

By H. E. ZIMMERMAN

Alice and Phoebe Cary, the well-known poets, were born at Mount Healthy, Ohio, eight miles from Cincinnati, in 1820 and 1824, respectively. The last 20 years of her life Alice spent in New York in untiring literary labor, made more difficult by much ill health, lightened by the society of her sister and the affection of many friends. Phoebe Cary is remembered especially by the beautiful hymn, "One Sweetly Solemn Thought," written one Sabbath morning in 1852, after she had returned from church.

The oak tree shown here was planted by the Cary sisters in 1832, by the roadside, at their home, "Clovernook." It stands on the road from "College Hill" to Mt. Pleasant, Hamilton County, Ohio.

SOUTHERN PINE BEETLE
THREATENS

Recent investigations by the Bureau of Entomology indicate that there are serious local outbreaks of the southern pine beetle in northern Virginia, West Virginia, North and South Carolina, Mississippi, Louisiana, Texas, and Florida. The insect is ranging farther north than it has since 1893.

This insect is the most destructive enemy of all species of pine in the Southern States. It has killed more merchantable timber during the last 30 years than has died from all other causes combined. Between 1890 and 1893 it killed a very large percentage of the pines of West Virginia and Virginia, and since the earliest records in 1842 has killed a vast amount of timber in the Atlantic and Gulf States, most of which has been a total loss.

The last serious outbreak of this insect was from 1910 to 1911, when a vast amount of timber was killed throughout the South, especially in the Atlantic and Gulf States (South Carolina, Georgia, Alabama, North Carolina, Mississippi, Texas, Florida, Louisiana, etc.). In some localities whole forests were killed.

The southern pine beetle is a small brownish or black beetle, somewhat smaller than a grain of rice. It flies from March to December and attacks the middle to upper portions of the trunks of healthy pine trees, causing their death by excavating long, winding burrows or egg galleries, which extend through the inner layers of the living bark.

The prevention of serious outbreaks and the control of this menace to the great timber resources of the South are not only possible, but entirely practicable. It is only necessary to cut and utilize for fuel or lumber during the fall and winter months all trees that died during the late summer and fall, burning the bark of the main trunk. However, co-operative action is highly essential.

ROTHROCK TABLET SOON TO BE
PLACED

The first memorial tablet to a member of the profession of forestry to be placed in a state capitol will be dedicated in the rotunda of the Capitol at Harrisburg, October 29. It is a bronze tablet to the memory of Dr. Joseph T. Rothrock, "father of Pennsylvania forestry," the first forestry commissioner of the state, who for twenty-five years was connected with the State Forestry Department.

The tablet was presented by 200 friends who desire to memorialize his long service to the commonwealth. Dr. Henry S. Drinker, president of the Pennsylvania Forestry Association, will present the tablet. It will be accepted for the state by Governor Pinchot. Maj. Robert Y. Stuart, Secretary of Forests and Waters, will speak on the accomplishments of Doctor Rothrock during the eleven years he was commissioner and the fifty years he devoted to forestry work.

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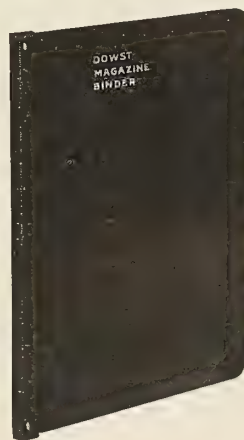
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"KILLA ME, JOE!"

When the sheep of a certain permittee entered the forest, Ranger Pelton cautioned the foreman, Joe, about fire. He told him to see that the Basco herders were given proper instructions. The foreman agreed that he would see that they treated fire sacredly; so, approaching the herders, he said, "Now you fellows be careful of your camp fires. Clear a big place around them and never throw your cigs or matches away unless they are dead out. If you let a fire get away from you, you will be shown no mercy. They will take you out without a trial or anything, and that ranger will put a rope around your neck and hang you to the first tree."

A few days later one of the herders was taking a siesta under a tree with a smoke in his mouth, and he dozed off. The duff around him caught fire and started to smoulder, making more smoke than anything else. When the dozing herder awoke he was surrounded by a smoke screen. It happened that the foreman, Joe, arrived just as the herder jumped up and started to beat frantically at the ground with his hat, yelling like a lunatic. In his frenzy he didn't see the foreman until he was close by. He threw Joe a pleading look, and in a voice distorted with emotion he cried, "Joe, for God's sake, Joe, getta beeg gun, Joe, and killa me queek! I no lika be hung."—*The Lemhi Ranger*.

PAPER INDUSTRY IS INVITED TO ADVISE WITH DEPARTMENT

Twenty leaders in the American pulp and paper industry have been asked by Secretary of Agriculture Wallace to form an advisory committee to work with the United States Department of Agriculture in formulating and carrying out its forestry policies which relate to the supply and use of timber in making paper and kindred products.

Secretary Wallace states that the creation of an advisory committee composed of men intimately concerned with the pulp and paper industry will, in his opinion, insure thorough consideration of requests for advice as well as bring forth advice itself which would deal in a searching and practical way with the fundamental problems of the industry.

"The members of the committee, and through them the entire pulp and paper industry, should become more directly concerned in the development of forestry policies and in the conduct of our research work, whether that of the Forest Products Laboratory, of the Forest experiment stations, or along economic lines," said Secretary Wallace.

SOLVING FENCE PROBLEMS ON THE FARM

Farmers of Iowa are awakening to the fact that the homely fence post is a real problem, according to the Iowa State College of Agriculture. "The inquiries regarding treated posts and the general attitude of the farmers throughout the state," it says, "show

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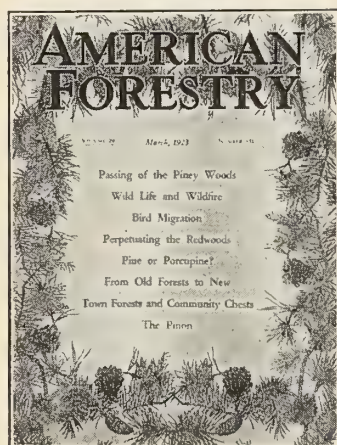
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clearly that the cost of fence upkeep is one of their real problems."

The Forestry Extension Division of the college is planning an extensive campaign to help farmers with their fence problems by showing them how to treat their posts more economically, so that they will be protected from wood-destroying fungi. Twenty-seven counties of the state have already signed up for forestry extension assistance in wood preservation for 1924.

Another significant development in Iowa is the rapid expansion in tree-planting, twenty-nine counties having requested assistance in this work for 1924.

Requests for marketing woodlot crops are growing more numerous. This is one of the fields in which the least information is available. The university has already arranged to lend assistance to fifteen counties in this work.

THE RANGER SCHOOL AT WANAKENA

The authorization by the New York State Legislature and the approval of Governor Smith of the new building for the New York State Ranger School establishes a high mark in rapid development of forestry educational institutions. The plans of the new building have been completed and the work on the structure will begin this winter. The location of this unique school on the shores of Cranberry Lake, in the heart of the Adirondacks, makes it unusually attractive for students who love the freedom of the primeval forest and at the same time desire to acquire some of the fundamentals of the forestry profession.

The Ranger School was first established in 1912, on a forest of 1,800 acres. This tract, near Wanakena, New York, was presented to the College of Forestry at Syracuse University by the Rich Lumber Company. The southeastern portion, bordering on one of the numerous arms of Cranberry Lake, affords an ideal location for a school building. During the succeeding years buildings were constructed as funds became available, until the inadequate and overcrowded conditions and the consequential hardships experienced by students made a larger and better school necessary. The old buildings and tents will be supplanted with first-class living quarters for seventy students and faculty, class-rooms, drawing-rooms, and laboratories.

A WOODEN BOAT FROM THE STONE AGE

Many of the mightiest strides of science through the ages were vividly illustrated in the Tercentennial Jubilee Exposition in Gothenburg, Sweden, says the *Science* news letter.

Archæology has proved that the region where Gothenburg now stands was inhabited at least 5,000 years ago by the ancestors of the present Swedes. One of the most interesting exhibits at the exposition is a well-preserved skeleton of a man who lived in

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AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

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the Stone Age, 5,000 years ago, and who had evidently met his death on what was then the western seashore of Sweden. With his skeleton was found a two-edged ax. This crude weapon, which was also a tool, contrasts strangely with the exhibits of modern cutlery, surgical instruments, and delicate tools which have become possible through the unusual refinement of Swedish steel.

From the Stone Age also comes an actual boat, which was discovered near Gothenburg. Though made of wood, this boat has, curiously enough, been fairly well preserved through fifty centuries. One can see that it was constructed by burning out the inside of a log, which was afterwards trimmed with a flint ax. This rare relic, certainly one of the oldest marine objects in the world, is item No. 1 in the Navigation Exhibition of the fair, which, according to experts, is the most complete of its kind ever prepared. Four hundred ship models alone are on display and every phase of navigation is illustrated, whether the propelling power is furnished by oars, sail, steam, or oil.

Looking Back

[Continued from page 686]

though we were touched lightly in that respect compared with many others, we had cares and misfortunes of all kinds, and as I look back I wonder how we managed to keep on top.

We found it very hard in normal times to make our small salary feed and clothe us, but since the war it is an exceedingly hard struggle. With the high cost of living going higher and higher and the materials of so much inferior quality, it has become not a struggle, but a grim fight, to stretch the ranger's salary enough to meet the expenses incident to rearing a family of six children; and the problem now to be solved is how are we to educate them, so that they can take their place in life, with the meager school facilities that present themselves to rangers working in the Forest Service.

I believe that the majority of people have the idea that Government ranger stations are quaint and charming dwellings, well equipped with modern conveniences and set in picturesque surroundings. I have not found it so, I regret to say, nor have many other rangers' wives, especially in our western forests. *Very few* stations known to me have water systems. Usually the water supply comes from a creek, an irrigation ditch, a spring, or a well. Other equipment commonly found in modern homes is conspicuous by its absence; so I, like many another, have had to school myself to do without these helpful conveniences.

And so, by working twelve and fourteen hours day after day, being wife, mother, cook, maid, laundress, seamstress, telephone and office girl, and, when the necessity demands it, doctor and nurse as well, the

dreams of romance and adventure have become for me a verified realization that "life is real and life is earnest."

SENATE COMMITTEE HEARINGS

The special Senate Committee on Forestry will hold the last of its public hearings during November, preparatory to making its report to the new Congress. On November 15th the committee will hold a hearing in Asheville, North Carolina, and on November 19th, a hearing in Harrisburg, Pennsylvania. The last hearing will be held in Washington on Thursday, November 22d.

The committee plans to submit its report to the Senate as soon after it convenes as possible. It is expected that the report will be accompanied by a proposed forest bill, reflecting the committee's recommendations of legislative action which the Federal Government should take.

ORDERS FOR MORE THAN 3,000,000 TREES

Citizens of Pennsylvania will plant over three million trees in the spring of 1924, reports the Department of Forests and Waters. The demand for forest trees has become so great and is increasing so rapidly that it is now impossible for the state nurseries to supply all the trees that are asked for. Individuals, fish and game clubs, conservation associations, Boy Scout troops, and industrial concerns that have a regular planting program are submitting their applications early, so that they will be sure to get the trees they need, for the department will handle the applications in the order that they are received, and 415 applications have already been filed.

The planting of forest trees was started in Pennsylvania in 1899, when 1,000 trees were planted. In less than 25 years more than 59,000,000 trees have been set out on the State Forests and on privately owned forest land. This planting work has brought back to production 55,000 acres of land that was idle. When the trees reach maturity they will produce almost two billion board feet of wood.

Fording the Rio Grande in the Dark

[Continued from page 665]

minutes later, so it seemed to me, Mullen and the ranger each had hold of a boot, dragging me out and saying breakfast was ready. Mullen did not have to wait; he did not have to know, either, how near he came to waiting, nor exactly why.

Yes, there is excitement in the race to a fire, but *then* you have your fighting clothes on, your blood is racing, you can *see*, and you take what comes and don't count the odds; but I have never had more thrills to the cubic minute, nor come nearer losing my nerve, than in the few minutes it took me to ford the Rio Grande in the dark.

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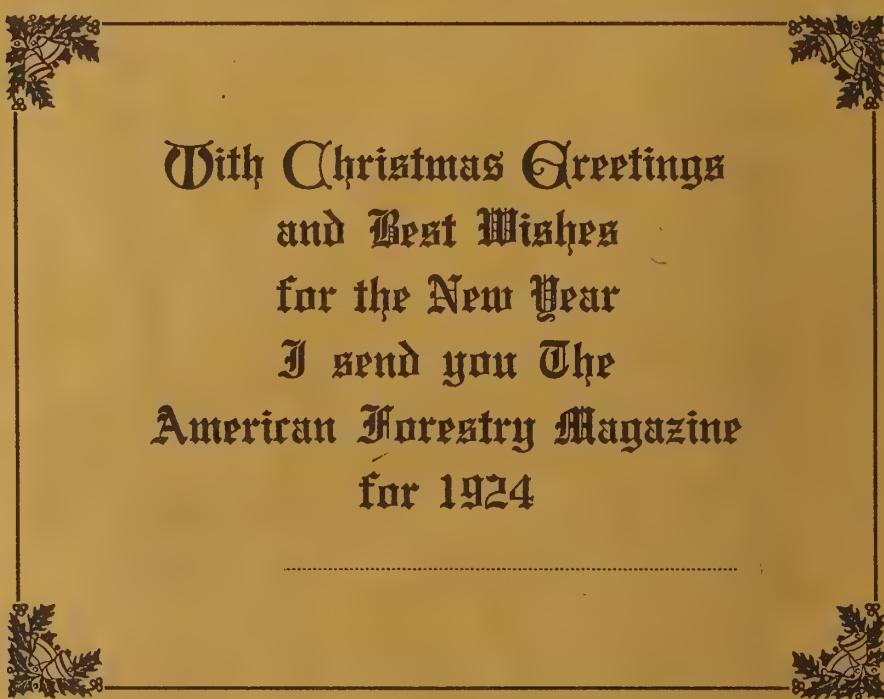
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AMERICAN FORESTRY

An Illustrated Monthly Magazine

Devoted to

Forests and Forest Life

VOLUME 29

December, 1923

NUMBER 360

Christmas Landscapes

The Old Men's Toy Shop

Balancing the Forest Ledger

A Living Christmas Tree

The Moose Butchers of Kenai

The Christmas Birds

Bayberry Candles



The American Forestry Association

Washington, D. C.

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNAL FORESTS.

FOREST RECREATION as a growing need in the

social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

DECEMBER, 1923

No. 360

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AMERICAN FORESTRY

VOL. 29

DECEMBER, 1923

No. 360

Our Christmas Tree

By E. G. CHEYNEY

TO MILLIONS of people, and more especially to the millions of children in Western Europe and America, the Christmas tree has become the symbol of joy—the concrete, tangible emblem of Christmas. Other forms of celebrations have their peculiar attractions, but the Christmas thoughts of children throughout the Christian world are centered around that gorgeous tree. For them Christmas without a tree would be almost unthinkable; it would scarce be Christmas at all.

And yet the tree has not always been so closely associated with Christmas. From time immemorial heathen people throughout the world have worshiped the sun in some form or other. Naturally enough, it was the turning of the sun to the south, the lengthening of the days and the shortening of the long, poorly lighted nights, which called forth the most devout rejoicings. The winter solstice was the occasion of the wildest joy.

Three thousand years before the birth of Christ the Egyptians were holding such a celebration in the month which we know as December. It is there that we catch our first glimpse of a tree taking part in the festivities. The palm trees of Egypt put out a leaf each month, and the tree with its twelve leaves was looked upon as the symbol of the completed year. So a palm tree was probably the ancestor of the Christmas tree of today.

Almost three thousand years later we find Virgil describing the symbolic tree in his second Georgic: "Oscilla ex alta suspendunt mollia pinu." It formed a part of the celebration of the Saturnalia, the Romans' rejoicing over the winter solstice. No longer a palm tree, but a conifer, tall and covered with decorations, it must have closely resembled our present Christmas tree.

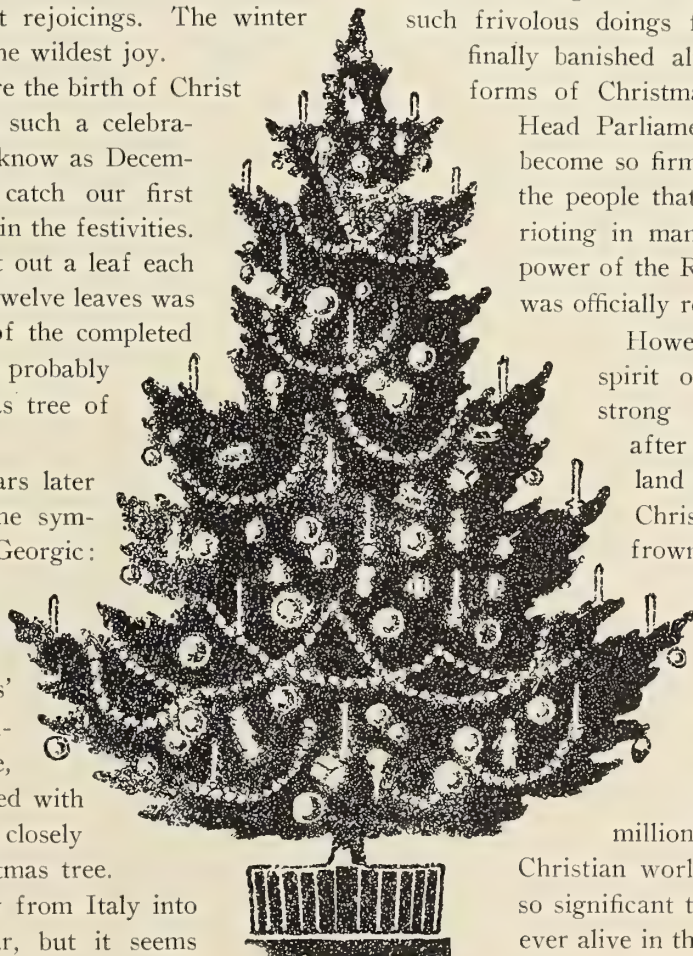
Just how it found its way from Italy into Gaul is not altogether clear, but it seems

likely that it was carried over the Alps by the legions of Drusus in his campaign against the Germans, about 15 B. C.; but certain it is that at about that time the tree took its place in the Yuletide celebrations of the Germans in connection with the visits of the present-bearing Knecht Rupprecht, the Teutonic St. Nicholas.

From Germany it soon wandered into the Yuletide celebrations of the English. Four or five centuries later, when the church adopted December 25 as the date for the celebration of Christmas, the tree of the Yuletide was taken over, along with the other heathen decorations of the Roman Saturnalia and the holly and mistletoe of the ancient Druids, to play a new rôle in paying tribute to the birth of the Christ Child.

For a thousand years it played its part faithfully. But with the growth of the Puritan spirit in England such frivolous doings fell into disrepute, till it was finally banished altogether, along with all other forms of Christmas celebration, by the Round Head Parliament. But by that time it had become so firmly established in the hearts of the people that the decree was received with rioting in many places, and as soon as the power of the Round Heads waned the custom was officially restored.

However, though weakened, the spirit of Puritanism still exerted a strong influence. For many years after the settlement of New England the Christmas tree and all other Christmas festivities were severely frowned upon. It was not till the writings of Dickens in England and of Washington Irving in America revived the old-time spirit of Christmas that the tree again blossomed out in all its present glory, to be the delight of millions of children throughout the Christian world—a custom so beautiful and so significant that its practice should be kept ever alive in the hearts of men.



A Forest Policy—The Immediate Necessity

National and Local Dependency upon Continuing Forests Demand That Federal Action and Leadership be Speeded up Without Further Delay

BY HENRY S. GRAVES

President, American Forestry Association

ONE fact stands out paramount in the forest situation today. It is that the Federal Government must act, and act promptly, to insure the people of the United States against impending forest poverty.

Our people are demanding that protection. They are as much entitled to forest improvements as to good roads, good rivers and harbors, and other improvements which make for permanent prosperity and national security.

Public interest in forestry long ago passed the sentimental stage. It is today based upon recognition of the urgent need of continuing forests. Every state, city, and town in the United States must have the products of the forests. This need has not and cannot be successfully disproven.

As long as our remaining forests, already far removed from the center of our population, are being destroyed and millions of acres of forest land are being devastated at a rate 400 per cent faster than new forest growth is being provided, our people, our industries, and our whole home-building society are without protection, and there can be no excuse for temporizing.

That the situation demands action is nowhere denied. The American Forestry Association urges immediate federal action—more vigorous and on a far greater scale than heretofore. It advances three specific proposals as to action which should be taken at once:

I. A program of acquisition of public forests, national in scope and on a scale really commensurate with the public interests involved. This program should include the establishment of National Forests not only for the protection of watersheds, but also for the production of timber; to serve as centers of fire protection and as demonstration areas in building up private forestry, and to provide other public benefits. There should be a federal policy analogous to that of highway development, looking to an authorization by Congress of \$100,000,000 to be available during the next ten years.

II. The immediate initiation of vigorous measures to stop the devastating of forests, by fire and otherwise, on private lands. The initiation of a large program of acquisition of public forests where these do not exist today would in itself be a powerful factor in forwarding private forestry. Liberal appropriations for co-operation with the states and other agencies in fire protection and reforestation, and insistence by the Government that private owners thus aided by the public do their part in the work of forest perpetuation are essential measures. Public education, nation-wide and local, must be conducted on a large scale, and the Government must provide

funds for research and experiments to lay the very foundations for forestry practice.

III. Inclusion within the National Forests of all lands in the unreserved public domain which are better suited to growing timber than any other purpose, and the placing under forest management of all federal lands which are available for growing timber without conflicting with their primary use for other purposes. The Federal Government today is the owner of some

ten million acres of land on which forests should be grown, but which today are either under no form of forest management and fire protection or are inadequately protected. These lands include not only public domain, but forest lands in the Indian reservations and surplus military reservations.

Immediate action along these three lines will constitute a real step forward. It will give a new stimulus, both to state and private forestry. It will set in motion a movement in forestry that will react favorably on local industrial developments and will return to the nation many times what it costs in its present outlay. The measures

proposed will not constitute a final solution of the forestry problem, but they will provide a protective foundation.

We have been dealing in a small way with a problem of gigantic proportions. Our forest problem has to do with the productive service of one-third of the land of the entire country, and with industries and resources that enter into the daily life of every citizen.

Federal action and leadership must be speeded up. The states today have a large task to perform, but they will not and cannot be expected to take the lead. They are moving desperately slowly, and are likely to continue to do so if the nation itself, through the Federal Government, does not take hold of the forest problem in a larger and more effective way.

The need of public forests cannot be minimized. They constitute the backbone of American forestry. This does not mean, however, that the public should undertake to acquire enough land to provide for the country's need of forest products and for other benefits derived from well-handled forests.

On the contrary, the bulk of our forests will continue to be in private ownership, even under the most ambitious policy of forest acquisition. But the most effective activities in forestry will center around the public forests, as is the case now in the Far West. They are the most effective of all instrumentalities in bringing about intensive fire protection and forestry among private owners.

“AS long as our remaining forests are being destroyed and millions of acres of forest land are being devastated at a rate of 400 per cent faster than new forest growth is being provided, our people, our industries, and our whole home-building society are without protection, and there can be no excuse for temporizing. The AMERICAN FORESTRY ASSOCIATION urges immediate federal action to provide:

“1. More Public Forests.

“2. Greater forest fire protection.

“3. Forest management for all federally owned lands, chiefly valuable for growing forests.”



NOT SO EASY WOULD THE ROTUND GOVERNOR OF THE AMSTERDAMS FIND THE TASK OF BALANCING THE FOREST LEDGER OF THE UNITED STATES, WERE HE CALLED UPON TODAY TO RENDER A VERDICT IN THE CASE OF FOREST DESTRUCTION *vs.* FOREST GROWTH

Balancing the Forest Ledger

By W. B. GREELEY
Chief, U. S. Forest Service

WASHINGTON IRVING draws a delightful picture of Wouter Van Twiller, the rotund governor of New Amsterdam, sitting as a magistrate and hearing the charges brought by one merchant against another for a shortage in accounts. The worthy governor demanded the ledgers of the contending tradesmen, counted their pages, and balanced the weight of each against the other in his enormous fists. After smoking six pipes of Dutch tobacco in unhurried reflection, the verdict was rendered. Since the two ledgers contained the same number of pages and were of the same weight, the accounts therein were held to balance each other and the case was dismissed. Great was the fame of Wouter Van Twiller as a lawgiver; so great, says the historian, that not again was the peace of his administration disturbed by litigation.

The forest ledger of the United States is mainly a record of expenditures from the capital account. The entries of timber income are few and meager indeed in contrast with the mounting figures of timber outgo. Yet, with an imperturbability scarcely less than that of Van Twiller himself, we have been wont to assume that somehow things would balance themselves. Only in recent years has the realization come home that we must have a real accounting with our timber supply, and that, to remain solvent, skill and

forethought must be applied to the national problem of balancing timber use by timber replacement.

Nearly half of the area comprising the continental United States, when Columbus discovered it, was a vast timber warehouse stored with the virgin growth of many centuries. From this warehouse something like three and a half trillion board feet of timber has been taken since the settlement of America began—either cut by man, or burnt by fire, or destroyed by natural pests. Less than one-third of the original forest growth remains, about 1,600 billion feet, and this is going at the rate of 60 billion feet a year. It was indeed inevitable and necessary that this great natural resource should be freely utilized, just as it was inevitable and necessary that 43 per cent of our virgin forests should disappear altogether to make room for cities and farms. It has all gone into the building of America. But that does not answer the prob-

THE FOREST LEDGER OF THE UNITED STATES IS A RECORD OF UNBALANCED EXPENDITURES FROM CAPITAL ACCOUNTS. THE HEIGHT OF THE LITTLE TREE ON THE LEFT REPRESENTS THE ANNUAL GROWTH OF OUR FORESTS, WHILE THE HEIGHT OF THE LARGER TREE ON THE RIGHT EXPRESSES THE YEARLY DESTRUCTION OF OUR REMAINING FORESTS



lem of balancing our ledger of timber use and timber supply in the twentieth century.

The replacement of virgin forests by new timber growth has already gone farther than many people realize. While the area of completely denuded land is far too large, on many of the older and lighter cuttings timber has again grown to merchantable size. The "old field" pine of the south and the white pine of the north have reclaimed a large acreage of abandoned farm land. "Second growth" has already become an important source of forest products. There are 600 billion board feet of newly grown or culled timber on land that has been logged at least once. We are making a little progress toward solvency.

Today's inventory of stock on hand, old growth and new growth combined, shows a total of about 2,200 billion board feet. We are drawing out the equivalent of 60 billion feet annually. We are putting back about one-fourth as much. In other words, 25 per cent of the present use of wood in the United States may be said to be replaced by new growth in the forests. The rest is an unreplaced drain upon the "capital account." We are still short by 75 per cent of a permanent and sustaining supply of timber.

The location of our remaining stumpage is even more important than its quantity. A hundred billion feet of standing tree trunks would be of little avail if so far away from the lumber-user that the cost of manufacturing and shipping them to him is prohibitive. Seventy-five per cent of the virgin timber is in the states bordering the Pacific Ocean. Half of all our forest supplies is west of the Great Plains. The cost of transportation has become the dominating factor in the lumber trade and a controlling factor in the price of the more common forest products. The transport bill on lumber alone amounted to \$250,000,000 in 1920. Only 20 states cut enough lumber to supply their own consumers in 1920.

We must do more than balance our forest ledger, as between yearly cut and yearly replacement. If wood is to retain anything like its universal use in the United States, we must make it possible for the main groups of users, geographically speaking, to get it near at home. We are learning that the consumers' dollars can be put

into growing timber close at hand with greater security and at lower cost in the long run than into hiring box cars or steamers to bring it from distant shores.

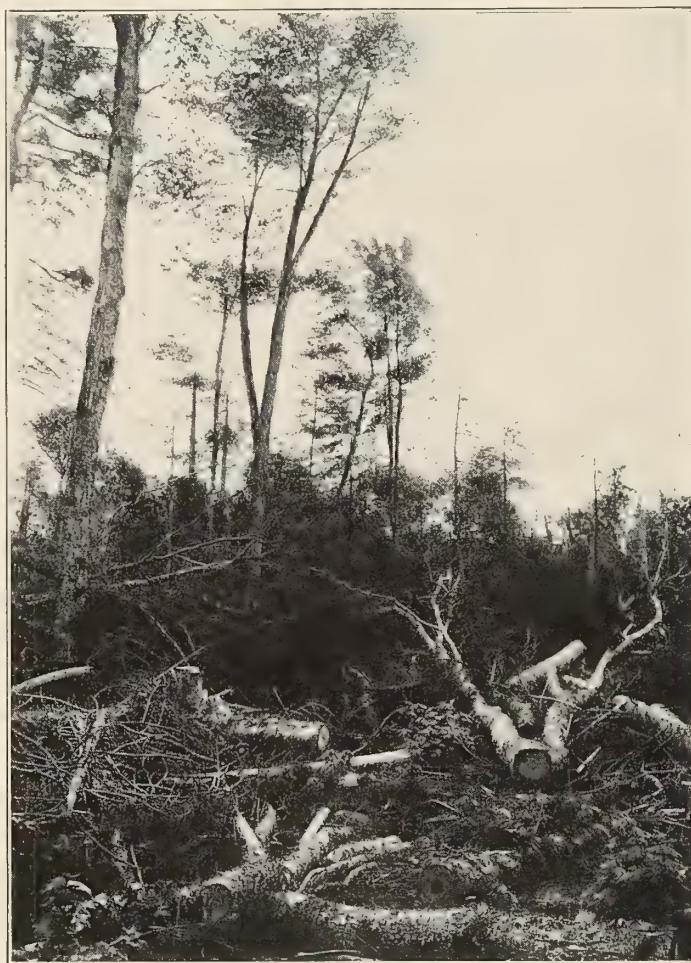
HOW CAN THE FOREST LEDGER BE BALANCED?

It is obvious enough that we can get at this matter of balancing the ledger in three ways—obvious, indeed, that we will have to employ all of them: We can cut down our consumption of forest products; we can make the wood cut from our forests go farther by using it with greater economy; and we can produce a much larger volume of timber than we are now growing. It may be said in passing that apparently but slim reliance can be placed upon the lumber piles of our neighbors. The accessible timber of the whole world is not adequate for the requirements of the twentieth century. Help can be had here and there, like the newsprint and pulpwood which we now import from Canada, but an attempt to shop abroad for any substantial part of our enormous wood bill would simply make timber a luxury in the United States.

Sheer necessity already has compelled the United States to cut down its aggregate use of timber. The displacement of wood by other materials is bound to go much further, as the prices of forest products advance. It seems to be taking place at a yearly rate of possibly $1\frac{1}{2}$ per cent of our total cut of timber. A timber famine—a restricted use of wood on account of excessive cost—is not desirable. And the timber famine is already here, in the parts of the country where its population and industries are most largely congregated. It is reflected in the shortage of a million dwellings and the inability of the middle-class American to build and own his

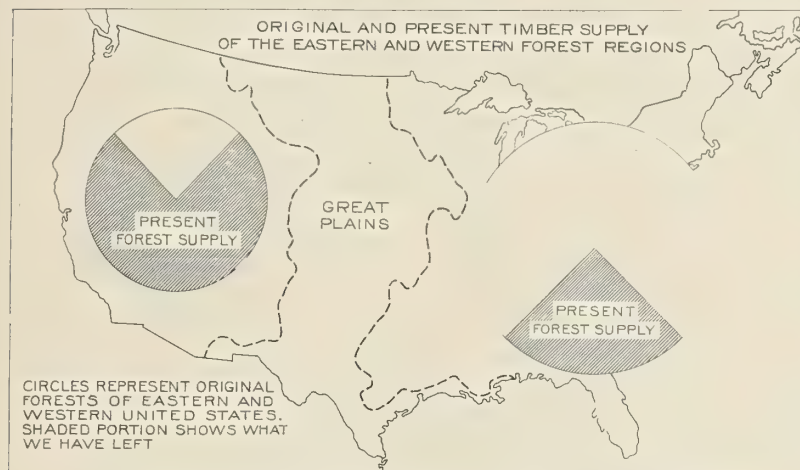
own home, in accordance with the traditions of his forebears. It is reflected no less in the serious curtailment of rural improvements, both better farm homes and better facilities for agriculture. We are feeling the pinch of an unsatisfied and unreplaced demand for timber.

It is impossible to say how far our consumption of forest-grown materials can be cut down without real social and economic sacrifice. That we must reduce to a point that hurts is written on the wall. It is necessary and



THE LEAVING OF GOOD WOOD IN THE FOREST HAS CHARACTERIZED OUR FOREST ACCOUNT, BUT SHEER NECESSITY IS AT LAST TEACHING US BETTER ECONOMY

desirable that substitute materials should absorb much or all of the greater use of wood which would normally follow increases in population by taking its place where they are found to be more suitable or economical. Beyond that point curtailment in the use of timber means hardship. It has already come too rapidly.



HOW THE RECORD LOOKS IN RESPECT TO OUR ORIGINAL FOREST WEALTH AND WHAT REMAINS. IN THE EASTERN UNITED STATES 75 PER CENT HAS BEEN SPENT, WHILE IN THE DISTANT WEST ALMOST 25 PER CENT IS ALREADY GONE

Nor should we overlook our enormous industrial use of the products of forests, aside from dwellings and other structures. The nations of Europe which are advancing industrially have slowly but almost steadily increased their per capita consumption of timber, notwithstanding its cost; and the United States leads them all in the volume and variety of its industrial uses of wood.

This part of the process of balancing the ledger is bound, at the best, to be a sorry piece of business. How serious it becomes will depend upon the energy and forethought which are applied to the other and more constructive ways of evening up the score.

GREATER ECONOMY IN USING WOOD

The very abundance and variety of the original forests in the United States led to many wasteful habits in the use of timber. Much of the low-grade material felled in the woods has never reached the lumber market because the price received for it would not repay the cost of manufacture and transportation. Customs dating from the time when our forests were termed "inexhaustible" have been responsible for much needless waste in refabricating lumber into factory products and in every-day building. Sheer necessity is now teaching us a much-needed lesson of economy.

In New England sawmills it is not uncommon now to see logs sawn so closely and lumber saved so carefully that a thousand board feet of lumber are obtained from two hundred cubic feet of round logs. The thrifty millers of Europe usually do even better than that; but once

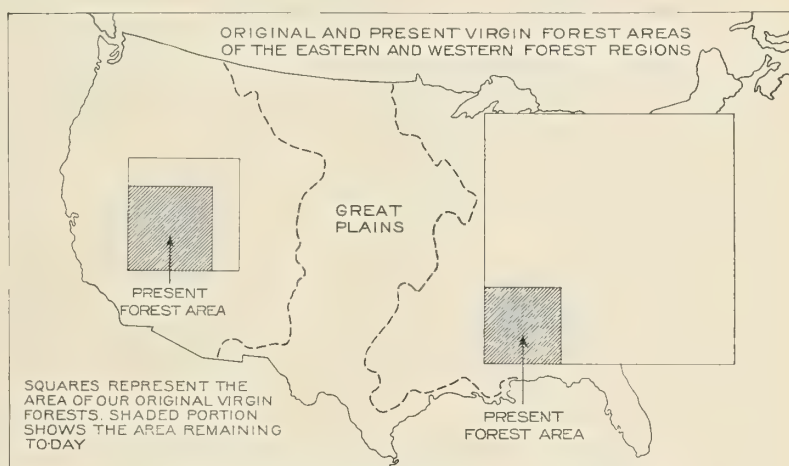
we can apply the New England standard in all our forest regions, we will save from the slash fires and put into use $3\frac{1}{2}$ billion more board feet of lumber every year without cutting a single additional tree.

A dovetailing of wood use by different industries, with the paper mill or the distillation plant utilizing the waste discarded by the sawmill, presents another tremendous opportunity for economy. Our various forest industries have lived too much unto themselves. Practically the entire pulp and paper output of Sweden is a by-product from the manufacture of lumber. An equally close use of raw forest material in the United States would effect a tremendous saving. It may indeed be possible to reduce our annual cut of timber by 15 or 20 per cent and still get an economic service from our forests equal to that which they now render.

AN INCREASED GROWTH OF TIMBER

After all has been said, we cannot hope to balance the forest ledger in any fashion short of disaster without vastly increasing the rate at which timber is grown. The accessible storehouses of virgin timber will not supply our requirements indefinitely. We must grow new forests to replace the old far more widely and generously, if we are not to limp along on a hopelessly meager and inadequate supply of timber.

Nor is this an impractical undertaking. We have the land—470 million acres of forested or forest-growing



A GRAPHIC PICTURE OF THE EXTENT TO WHICH LAND IN THE UNITED STATES HAS BEEN STRIPPED OF ITS VIRGIN FORESTS. ONLY A REMNANT REMAINS IN THE EAST, WHILE NEARLY A HALF OF THE VIRGIN FOREST OF THE WEST HAS BEEN CUT

soil. All the shifts and changes of agriculture are not likely to reduce it materially. We have favorable natural conditions for the most part. It is not unreasonable to believe that real forestry can produce here a staple crop of wood equal to the average obtained in Europe. That would mean an aggregate yearly growth of timber more than enough to offset the present rate of cutting; but it means growing over four times as much as we do now.

Best of all, three-fourths of our available timber-growing land lies eastward from the Great Plains, in the very parts of the United States which contain the bulk of her wood-hungry people. Here lies the great opportunity of the American people to bring their supply of timber into balance with their need for timber, and by the same stroke to give their idle or partly idle land something worth while to do. And by growing timber upon these millions of waiting acres close to the large centers of population and industry, the great burden of transportation upon the future cost of forest products will be removed. This is the constructive way to balance accounts with both our timber and our land. It promises not only replenished lumber yards and pulpwood piles, but local industries and pay-rolls and tax-paying resources. It will bring the lumberjack and the thriving rural community back into vast areas which are now retrograding through the idleness of land. It is the only rational solution.

Recent inquiries conducted by the Reforestation Committee of the United States Senate have brought out strikingly how nearly ready we are for rapid progress in reforestation. The old law of supply and demand is at work. The commercial impetus for timber-growing is steadily gaining momentum. A few far-sighted lumbermen in the South are

leaving the small timber in their logging, protecting their cut-over land, and planning their manufacturing enterprises with a view to an assured future. Others are studying their cut-over lands and weighing the possibilities of timber-growing as a business venture. Many landowners in the northeast are practicing some sort of forestry, whether they call it that or not. Two New England paper companies maintain forest nurseries and are planting on old burns and other denuded areas. Forms of really intensive silviculture, like girdling old "wolf" hardwoods and thinning young stands of dense spruce, are being studied by business men. Forest planting on private land now reaches scarcely 20,000 acres a year, but the states which maintain forest nurseries are practically unanimous in reporting that the present demand for cheap planting stock far exceeds their ability to supply it. The leaven is at work.

Even on the Pacific coast, which is but fairly entering its heyday of virgin forest exploitation, private reforestation has begun. Several redwood operators, recognizing the commercial possibilities of a growth rate which prob-

ably exceeds that of any other forest type in the Temperate Zone, have begun the planting of their cut-over land. Here and there in the California Sierras and the Douglas Fir belt of Oregon and Washington lumbermen are beginning to study the earning power of their land as a business asset which they can afford no longer to ignore. One of the striking signs of the times is the extent to which timber-growing is creeping into the management of

private land. So far it represents, to be sure, but a few small spots on an enormous map, an insignificant fraction of the 375-odd million acres of forest or potential forest land in private hands. Yet we are making headway.

WE MUST SEE IT THROUGH

The next great step in the forest policy of the United States should be designed to give the freest possible play to the economic forces which are making the commercial growing of timber possible. There is much indeed that remains to be done. We are not yet "over the top."

There never was a time when the need was greater for keen public interest and organized public effort in forestry. The favorable portents in the skies should inspire no illusory assumption that the task has been accomplished, but rather a more determined effort to see it through.

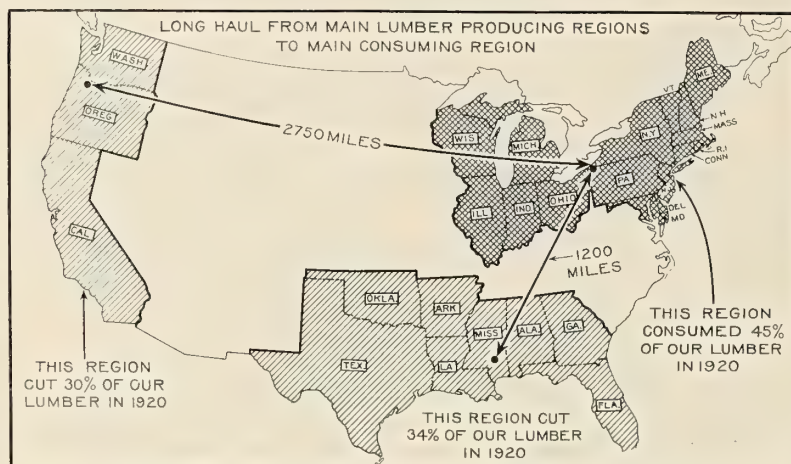
There were 52,000 forest fires in 1922. They swept over 8 million acres of forest land. Thirteen states contain large forest areas whose productive

use is necessary in balancing our ledger, but have made no effort toward forest protection or renewal. We are still far indeed from a method of taxing forest land which will give timber-growing a fair chance. For every landowner who has attempted reforestation there are hundreds who have done nothing. Many of them are held back by the hazard of fire and the risk of uncertain tax burdens.

There is a vast need for nation-wide education in for-



THE LOG OF THE LUMBER DOLLAR
AS WRITTEN AT RETAIL YARDS IN
MINNESOTA



WHERE OUR LUMBER IS MOST NEEDED AND WHERE IT
MUST NOW BE OBTAINED. HERE IS A GRAPHIC PICTURE OF
HOW FOREST EXHAUSTION HAS DISLOCATED OUR FOREST
SUPPLY AND IMPOSED HEAVY TRANSPORTATION COSTS ON
THE LUMBER-USERS

estry. We have millions of farmers who will become timber-growers, once the opportunities for profitable timber-growing are made plain and the art of timber-growing becomes part of our farm lore. The education of the every-day citizen in the broad phases of forestry is equally important, for success in making the United States a timber-growing country depends upon his comprehension of the problem, upon his care with fire in the woods, and upon his readiness to support the public enterprises and measures which are essential to put the job over.

While working out ways and means for enabling private timber-growing to go forward with all the momentum it can gather, we must not overlook the need for public forest ownership on a much larger scale. About one-fifth of the forest lands in the United States are under federal or state management. In most European countries the public ownership of one-third or more of the forest-growing area has been found essential. This is equally true of the United States.

There are large areas on the headwaters of important streams where only public ownership can afford security for vital water sources. There are large areas of denuded land whose restoration to productive forests will be so difficult and costly that public agencies must assume the task, if it is to be done at all.

There are large areas whose rate of growth is small and whose fire hazard is exceptionally high, where public ownership must assume a burden of land management which the private owner cannot carry. There are important forest regions where public ownership must blaze the trail, do the pioneering work, and establish demonstration centers of timber-growing. In the last twelve years, while we have laboriously acquired about 4½ million acres of additional state and federal forests, over 75 million acres of timber land have been logged off and largely denuded. It is essential to our progress as a

timber-growing nation that municipal, state, and federal forest ownership be aggressively extended.

Forestry is not wholly a matter of balancing ledgers. The forest background which has surrounded us from the beginning has been an asset of incalculable value in other ways than furnishing timber. It has contributed to the resourcefulness and energy of American character, to the opportunities for wholesome recreation, and to the perpetuation of the game animals, birds, and fish which we prize so highly. The sentiment for forest preservation which does not think of timber in terms of board feet, but as alluring woods and coverts for wild life, is instinctive. We inherited it from the northern races of Europe, with our Christmas trees and open fires.

The value of a forest background in America will increase proportionately as cities grow and the strain of living becomes more intense. Aside from the economic considerations with which only this article has at-

tempted to deal, there will be a tremendous unearned increment in physical and moral health and in the wholesomeness of American life from every gain made toward balancing our forest ledger. These benefits, indeed, should weigh largely in our national policy of forestation.

The main point is that

solid economic ground underlies the whole movement. There is no need for our going into timber bankruptcy. We must in all probability pass through a period when timber will be scarce and dear; but we can balance the forest ledger by constructive measures in which increased production of wood and more intelligent use of wood will far outweigh curtailment in the satisfaction of essential requirements for wood. And by meeting this economic situation we will restore the forest background of America.



MEMBERS OF THE SELECT SENATE COMMITTEE ON REFORESTATION STUDYING FOREST PROBLEMS IN THE WEST. THE INVESTIGATIONS OF THIS COMMITTEE HAVE BROUGHT OUT STRIKINGLY THE NEED FOR RAPID PROGRESS IN REFORESTATION

A CHRISTMAS CAROL

*Thar weren't no laughin' goin' on in the house
When Singing Joe played for the boys;
The barkeep and punchers kept still as a mouse,
The greaser mule-boys quit their jabbering noise.
His voice sounded cracked, the pianner weren't right,*

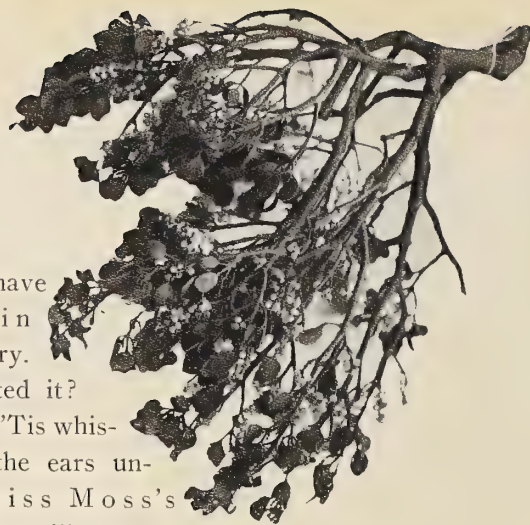
*But nobody had no fault to find;
The tune was "Home, Sweet Home," 'twas Christmas
night,
And poor old Singing Joe was blind.*

—Owen Wister.



Forest Festivities

BY CORA C. BUTLER



A RECEPTION for evergreens? Wonderful! Even old lawgiver oak, King *Quercus Alba*, thrills from great tap-root, through scaly body, to his mighty crown; long-leaved Willows, mashed by Poplars' toes, huddle on river banks, gossiping; Lady White Birch resilver her stems; restless Asps exult upon gravelly hillsides; water-nymph Red Birch makes her Yellow wood-sister preen up a bit; Black and White Ash trees postpone knob-bowl and canoe-paddle wrangling; Walnuts and Oaks cease "Golden Age" and "Jove's Acorns" disputes.

Why not? Never in all history have trees so honored their own. Evergreens of every race, color, form, and fashion are to receive tribute from the sylvan world on Christmas Day, in the year of our Lord nineteen hundred and twenty-three—Pine, Holly, and Mistletoe special honorees.

Fast the news travels. The message is blared and blasted from mountain side to coast, through valleys, along streams, until all wood life is atilt, radiantly expectant. Farmer Hysmith, kindly old soul, tramping though snowdrifts, replenishing feeding stations for his forest friends, observed that never in all his born days had he seen so many big and little tracks "goin' every which way."

Track-makers are curious; little four-footed wanderers prate of nothing save the gala affair; sleepy Bruin threatens vengeance if permitted to fall asleep before the event; sly old Gray Wolf changed his seven-day beat to keep posted, and missed for three weeks the poison intended for him. Dwellers near the deep woods find more traces of fays, dryads, nymphs, fauns, and

fairies than have been within their memory.

Who started it?

Uncertain. 'Tis whispered that the ears under little Miss Moss's coquettish mantilla heard more than anybody, being on the tender side of more trees. No secret that she threaded the Live Oak's long gray beard; all forest people saw her swathing the stately White Pine's weather-front while he reposed with folded needles; in fact, she doesn't deny spending every moment weaving velvety mantles, tufting nappy blankets, banging anklets, fitting soft green tunics; so, of course, she knows who planned the reception. Tell, she won't though.

Evergreens are hilarious. Tall, tapering Spruces whorl slender spires of happiness; not one laughs at decrepit old ancestors for grinning with white-gummed gashes. Wintergreen, Bittersweet, and their kind wreath, garland, circle, curl, and entwine in graceful exuberance.

How they're embellished! Some conifers wear resin opals, others limpid pendants. The Mistletoe loggia is crowded with sandal-wood descendants heavily bepearled.

All are appreciative. Young Hemlocks, in luxuriant raiment, courtesy to the ground. Mixing with the friendliest fellowship of all are broad-leaved Rhododendrons, Laurels, and Hollies.

But *Ilex Apaca*, Christmas Holly, bristling, spiny, in shimmering new holiday



WHAT DISCUSSIONS! THE EVERGREENS ARE HILARIOUS, NODDING AND GOSSIPING AND COMPARING NOTES. WHILE THE TALL, TAPERING SPRUCES WHORL SLENDER SPIRES OF HAPPINESS



THE PINE THINGS HUDDLE TOGETHER—EVERGREENS OF EVERY RACE—WHILE GREAT CAMARADERIE FLOURISHES, A FOREST CONFRATERNITY NEVER DREAMER OF, AS THEY PREPARE TO RECEIVE TRIBUTE FROM THE SYLVAN WORLD

greenness, ruby-studded, outshines everything else in the woods.

Great camaraderie flourished—a forest confraternity never dreamed of. Conflict for space and light is forgotten. Brawny arms, leafy and leafless hands, struggling roots, all commingle in amity. Old Hickory's boastfulness of homeland loyalty is ignored; poor Black Jack, noticed for once in his lowly life, brags of his fine relative, Live Oak; Elm and Beech discard tracery rivalry. All listen reverently to Sequoia, Pine, and Poplar as representatives of ancient forest life.

What discussions! There are national problems just as humans have: "Reparation" from *Quercus* for pushing *Pinus* almost into the sea; "allied debts" to the Evergreens for cheer, comfort, and color during winter; "pacification" for the threatened domesticity of *Pinus*, who is seen waging a losing battle with ax and torch and begging man's protection on "areas of preservation" where once he boasted "centers of distribution."

Perhaps glasses are lifted to old limpet Pitch Pine, only one of his tribe able to reshoot himself on a fire-swept area.

Local problems get an inning: A moose-eaten Striped Maple, Box Elder, and a disfigured old Sugar relative propose an aeronautic conference, where those interested may discuss laws of aerodynamics, new air routes, schedules, transfer privileges, wind tunnels, measurements of air resistance, even touch upon laboratories, chemistry, and biology in planning aircraft development, improvement of pilots, and aerial performances.

Humanity's ears should burn, for much is being said of climate, rainfall, river supply, and man getting his "strength from the hills."

Honestly, they have a sensation—the Marathon race

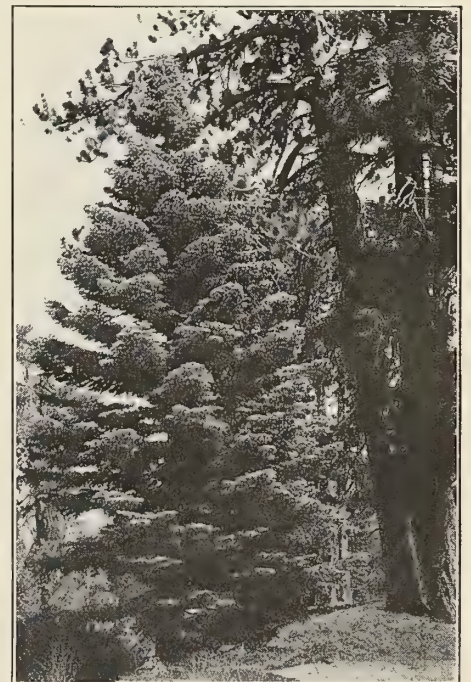
blisters and every cone rising in purple rage because the reception finds him in verdure ten years the worse for wear; Sycamore is tired of thrifty trees' jokes over his adopting a profession. Why can't you be where you stand, without rhyme or reason, he wants to know, casting his bark in disgust.

All in all, however, the day promises to be one long remembered. No Evergreen will be forgotten, but possibly the homage paid pretty Ground Cedar will come nearest encircling the Northern Hemisphere.

Forest folk fancy this ado safe-locked in their own wooded heart; at least, they've sent out no press announcements. But news will leak! I don't know—maybe it souged forth on a Pine-tree symphony; maybe wandered away on a Balsamic breeze. Anyway, Farmer Hysmith, full of poetry as a Pine, apologized, throwing his small load of Christmas greens on the porch: "Hadn't heart to cut many, Ma. Pretty things looked prinked up for a party."

for the North Pole between Tamarack and Black Spruce. No one attempts to calculate the winner; but since Tamarack is weakened to a small tree and Black Spruce has become a creeping thing upon the face of the earth, they admit the competition has lost flavor.

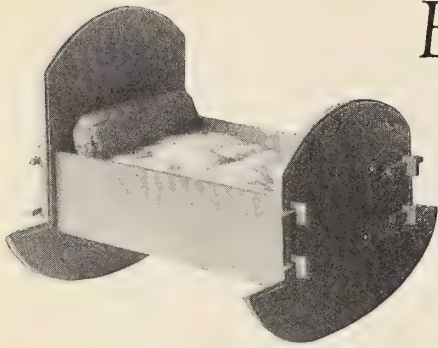
Discontent? A little. Ground Cedar thinks all one's fruit shouldn't go into gin-making; some Firs failed to seed last year, and now, full of jealousy, see the Spruces sending seed to Europe; Larch and Cypress wish every one to know they are Evergreens, too, if you please, even if leafless; the Balsam Fir, old "Cho-koh-tung," is bursting



STATELY PINE LEANS CONFIDINGLY OVER SILVERY FIR TO BRAG OF HIS WEALTH OF CONES, LENGTH OF LINEAGE, AND ANCIENT FOREST LIFE

The Shop Where Old Men Turn Boards Into Toys

BY WILLIAM H. MATTHEWS



Here the forests find expression in the form of wooden toys. Trees furnish the plastic material necessary for craftsmen who, because of age or infirmity, can no longer compete in the ranks of industry, but whose contribution to the happiness of the world is immeasurable.

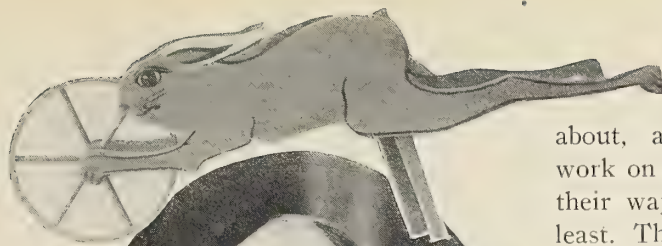
TUCKED away among jammed-up tenements, on New York's lower East Side, is a trim three-story, red-brick building. The passer-by, picking a way among the crowds of children that constantly throng the sidewalks in that neighborhood, might give a passing thought to the fact that the building is different in character from all others near by. Should his curiosity be sufficiently aroused to induce him to enter, he would probably be a bit surprised at what was going on within. Immediately he would note the smell of newly cut wood, of sawdust, of paint. A few steps down the hall and he would find himself in a carpenter shop, and around the benches old men, gray, bent and wrinkled, yet all busy at work, sawing, sand-papering, nailing. And at what? Workers in wood—sawing boards into wooden animals of the kind Noah drove into the ark, and many others since discovered; children's furniture and other wooden toys of many shapes and kinds; wheelbarrows,

kiddie cars, window-boxes, book-ends, etc. In another room he would see these flat, white shapes taking on line and color at the hands of another group of like old men, as they busily dip their brushes and sometimes their fingers in pots containing paints of every imaginable color. Here the lion acquires his ferocious look, the tiger and zebra their stripes, the leopard his spots, the rooster his red comb, and the cat his whiskers. The arks and animal chests, the crawling turtles and jumping rabbits, coming into the room as mere wooden shapes, go out with lines and character that put them in a class quite their own.

All sorts of things for the kids in their play—
Ducks that can waddle, dogs, horses that neigh;
Rabbits that jump; cats, tigers, and sheep;
Dolls with queer faces and turtles that creep.

By this time the visitor would have discovered he was in what is popularly known as The Old Men's Toy Shop, conducted by the New York Association for Improving the Condition of the Poor, for the purpose of giving to very old men, whom regular





industry can no longer be bothered about, a chance to work on and still pay their way, in part at least. There are many such—fine old men, who have come to know the meaning of the lines—

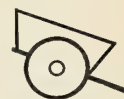
For no one wants an old man

In all the busy town;
The almshouse is a lonely place

To watch the sun go down.

I remember old John McCarthy, eighty-two years of

put that question to dozens of them, as I have come to know them intimately, and in practically every instance they first speak of their desire to keep their self-respect. Commitment to them would mean the total loss of that possession. Always have they worked and striven to keep that. "It is just the last step down," said one old man of eighty-four to me; "I had sooner be dead and done with it." In their minds it is the final punishment of poverty, against which they have struggled the better part of their days—punishment for a condition for which they are not to blame. More than that, they dread that feeling of isolation and loneliness in almshouses. Outside, in spite of the hardships of their days, they still feel that they are a part of the world, with freedom to go here and there as best they can.



The animals went in, two by two—
Elephant, tiger, kangaroo

age, as he came weary and foot-sore into my office one morning and sat down, saying, "I guess it ain't no use to look no more. I've tried all the places I can think of, and they all say the same thing to me—"You're too old to be of any use." At such times there are two things these old men can resort to. They can stand on street corners and with hats out pick up considerable money. This they will not do—not, at least, the finer of them—and it is those of whom I write. They might ask the city to commit them to the almshouse. The mere suggestion of the place strikes terror to their hearts. To avoid it, they will endure the greatest hardships, even semi-starvation. Why such feeling? I have

A little more than six years ago the shop was started, so that the answer of work and usefulness could still be given to some of these old men when they came to the A. I. C. P. asking for some advice as to what they might do for themselves. At first the articles turned out were most crude. It was difficult to distinguish the chickens from the ducks, and the sheep from the goats. The few people who purchased them did so out of sympathy for the old men rather than for any real value in the toys. But with instruc-



tion and practice there came steady improvement in the work, and today the products from the old men's hands sell in some of the best of the department stores, both in New York and elsewhere; also, the Association is able to keep a small sales place of its own all the year round, at 512 Park Avenue. Particularly at Christmas time there is a rush of business. For three months before that time old John Cooke, one of the patriarchs of the shop, is busy painting reindeer. He has come to be known as the "Reindeer Man." Another specializes in Santa Claus models.

What have been the occupations of these old men in former years? Many things. As some one once put it after he had asked this very question of several of the men:

Joe here was a wheelwright; his eyesight's part gone.
Old Bill was a seaman and sailed 'round Cape Horn.
Tim there was a coachman till autos came in.
A little too old, or a chauffeur he'd bin.

Jim here was a gard'ner—knows all about flowers;
Can't do it no longer because of the hours.
Tom started at twelve as a broker man's clerk;
Since then, so he says, he's done all sorts of work.

Why, again, it is sometimes asked, do they not save for their old age? Again let one of them answer that question as he answered it to me when I said to him, "Did you ever save any money for a rainy day?" A bit of a smile came with his answer. "Yes; several times; but the trouble was there were too many rainy days to save for." And then I learned his story, of the many days of sickness that had come to other members of his family, now all gone, when debts took the place of the savings. Another smile lit his face and he said, "There were six of us—four brothers and two sisters. We always helped each other, and our mother always told us to keep our troubles to ourselves." He always does that. This very old man has worked at the shop for six years, trudging back and forth in all sorts of weather, missing but six days in all that time, happy always at the chance to earn the little wage that keeps him going.

I could go on indefinitely telling individual stories of these old gentlemen, for I have come to know them intimately. Poor they are, to be sure, in material things, yet rich oftentimes in character—men who have given much of love and service in the years behind.

The Old Men's Toy Shop is by no means self-supporting. It has never been thought that it could be. It has been hoped that if the proceeds from the sales of the shop's products could be made to meet the wage fund of the old men, then friends could always be found to meet the other lesser expenses. Not quite that goal has yet been reached. Last year, for instance, there was paid out in wages to the men \$8,659, while the sales of their work brought in \$7,593.

Much work is done in the shop by hand that could be done far cheaper by machinery. This, however, would eliminate the only processes at which some of the old men can work, and the very purpose of the shop would in that way be defeated. I remember some time ago taking on a visit to the shop a man who had expressed a desire to me to help in the care of old people. As he

came out of the shop he remarked, "I don't think I want to visit here again; it is all so pathetic." My reply was, "Not for one moment. The pathetic situation would be if this shop were not here for these old men. They are not pitying themselves one bit; rather, they are happy every day of their lives in the chance to work and, as they so often say, "Pay their way to the end."

The group of men at the benches and paint pots has changed considerably during the six years. Several have gone across the line. Others have come in. At an annual dinner party, which is given by a particular friend of these old men, one can always count upon hearing from the lips of more than one of them, "I wonder if I shall be here again next year." Perhaps not. But, at least, he and all the others know that they have found friends who have lifted somewhat the shadows that crossed their paths and robbed their last years of much of their loneliness.

The Washington Elm Falls

THE Washington Elm, famous historical landmark of Cambridge, marking for so many years the place where George Washington took command of the Continental army, no longer stands in the little fenced-in plot beside Cambridge Common. On Friday, October 26, while workmen were busily attempting to remove some of its dangerously hanging branches, the old tree fell. It was discovered that about two feet below the ground surface the famous tree had entirely separated from its roots by rotting, and so it simply toppled over. It has been suggested that the trunk be cut up in pieces, each marked with a suitable inscription, and sent to the governor of each state, to the District of Columbia, and to Alaska, as a true memento of the famous old guardian of one of America's truly historical spots. The lines below, written by Mr. Holmes, were inspired by the fall of the great old tree:

Washington Elm, 1775—1923

Its time hath come! Like all that dwells on earth,
It had a day of death, a day of birth;
Yet still that tree like living landmark stood,
A leafless tree of lifeless limbs and wood.

Inspired to perform the will of God,
Here Washington beneath it drew his sword;
And here it thrived whilst generations planned
A greater grandeur for their native land.

Beside the Common, close to college gates,
That tree survived frost, storms, and other fates,
Till time and age, which still man's fleeting breath,
Had doomed that it should die a peaceful death.

Our children's children nevermore shall see
The leaves and shadow of the Cambridge tree.

—Charles Nevers Holmes.

The Moose Butchers of Kenai

BY AN ALASKAN

MURDER and starvation are stalking out of existence America's world-famous moose of the Kenai Peninsula, Alaska. The crime of exterminating our buffalo when the West was young was committed openly, without defiance of law, for there was no law. The crime of murdering our moose in Alaska is today being committed in defiance of law,—game laws enacted through our Congress at Washington and made sport of by the moose butchers of Kenai.

By adoption I am an Alaskan. For almost twenty years I have lived in the Kenai Peninsula country. I have traveled into almost every corner of its territory, with pack on my back in summer and by dog team in winter. I have studied the Kenai moose and I know what is happening to them. Would that I had the voice of the mightiest bull of them all to call to arms the sportsmen and wild-life lovers of America. They, and they alone, can save them.

The moose of the Kenai Peninsula are world-famous as the largest in existence. The spread of their antlers is enormous, the record pair measuring a little more than seventy-eight inches. Although found throughout other wooded sections of Alaska, these moose range

in greatest number and reach their highest development in the Kenai Peninsula. I do not pretend to speak for what is happening to moose in other parts of Alaska, but here in the Kenai country the area occupied by these noble animals of the wild has decreased very materially in the last few years, due to overkilling and to starvation.

I will speak of overkilling first. Our game laws are supposed to be enforced by the territorial government. They permit each hunter to kill two moose a season. The hunting season opens August 20, but the moose butchers kill when and as many as they please. Up until last spring, there had not been a game warden in the moose country since the warden at Kenai was removed and not replaced, eighteen months before. Our Anchorage warden is a clerk in a haberdashery, and he has not been off the railroad since he was appointed. Our restaurants are serving moose and other wild game meat, both in and out of season. One can find moose meat at almost all times of the year at the road-houses, tie camps, and restaurants in and around Anchorage, Seward, and Seldovia. It is the hind quarters of moose which have been brought in by the market hunters, by natives and



THE WILD-LIFE LOVERS OF AMERICA ALONE CAN SAVE TO AMERICA THE WORLD-FAMOUS MOOSE OF THE KENAI PENINSULA IN ALASKA. INDEFENSIBLE AS WAS EXTERMINATION OF THE BUFFALO, THE CRIME IN THE CASE OF THE ALASKAN MOOSE IS EVEN WORSE, FOR IT IS COMMITTED IN DEFIANCE OF THE LAW—LAW WRITTEN BY THE NATIONAL CONGRESS FOR THEIR PROTECTION AND OPENLY FLAUNTED BY THE MOOSE BUTCHERS OF KENAI



THE FAME OF THE ALASKAN MOOSE IS WELL DESERVED; HE IS TRULY A MONARCH OF THE WILD, CROWNED BY ANTLERS OFTEN OVER SEVENTY INCHES FROM TIP TO TIP

whites, and sold for whatever they will bring. In most instances the fore quarters of the animals have been left in the woods.

Kenai has a population of some three hundred people, whites and natives, and that many more dogs. They all live on moose meat. The Government teacher at Kenai told me that the people there kill about 450 moose every year, of which 90 per cent are cows. I myself have seen whole quarters of moose meat lying around the village, where the dogs had eaten their fill. Many people believe that the fox farmers are moose butchers. I have been much among the fox farmers at Casiloff River and have never observed them feeding their foxes much moose meat. They feed mostly rabbits, porcupines and fish.

The arch enemy of the Kenai moose is the market hunter—the moose butcher. He works on a large scale, in summer and fall, throughout the Cook Inlet section. The sale of his meat taken from wild animals, in or out of season, is so common that no one, excepting a few individuals honestly seeking to promote game preservation, pays any attention to it. On March 10 last a meeting of natives and whites was held in Kenai for the purpose of stimulating interest in wild-life preservation. At this meeting a man who had lived among us for sixteen years arose and said:

"The game laws of Alaska are

being violated every day. The moose are decreasing rapidly in the Kenai Peninsula and in all the Cook Inlet country. Hundreds of moose are being killed here each year without more than half of them being taken out of the woods. Moose meat is right here today being fed to dogs and foxes. In the winter the dogs around here are fed almost nothing else but moose meat. If the Government doesn't soon take a hand, the moose will be a thing of the past, as the caribou around here now are."

I personally know of one man who took sixteen moose from the mouth of Swanson Creek and sold them in Anchorage. In another case a man delivered thirty-two hind quar-

ters for the markets and left the fore quarters of the animals in the woods. I could cite many similar examples of killing—crimes against God, man, and animals.

The alien is one of the chief violators of our game laws. They are a class of men who are not sufficiently interested in our country to become citizens. They do not hesitate to violate our game laws when a few dollars might be gained, and our territorial government has failed utterly to make them respect these laws.

Under present laws the natives may kill moose at any

[Continued on page 750]



IN WINTER THE MOOSE FEED IN THE OLD BURNS AND OPEN PLACES, DIGGING INTO THE HEAVY SNOW FOR FOOD, OFTEN IN VAIN; AND A VERY SMALL APPROPRIATION, PROPERLY APPLIED, WOULD SAVE THOUSANDS OF AMERICA'S FINEST WILD ANIMALS FROM THE SILENT AND UNSEEN AGONIES OF WINTER STARVATION

The Foolish Fir-Tree

By Henry van Dyke

*A tale that the poet Rückert told
To German children, in days of old,
Disguised in a random, rollicking rhyme,
Like a merry mummer of ancient time,
And sent, in its English dress, to please
The little folk of the Christmas trees.*



A little fir grew in the midst of the wood
Contented and happy, as young trees should.
His body was straight and his boughs were clean;
And summer and winter the bountiful sheen
Of his needles bedecked him, from top to root,
In a beautiful, all-the-year, evergreen suit.

But a trouble came into his heart one day,
When he saw that the other trees were gay
In the wonderful raiment that summer weaves
Of manifold shapes and kinds of leaves:
He looked at his needles, so stiff and small,
And thought that his dress was the poorest of all.
Then jealousy clouded the little tree's mind,
And he said to himself, "It was not very kind
To give such an ugly old dress to a tree.
If the fays of the forest would only ask me,
I'd tell them how I should like to be dressed—
In a garment of gold, to bedazzle the rest!"
So he fell asleep, but his dreams were bad.

When he woke in the morning his heart was glad;
For every leaf that his boughs could hold
Was made of the brightest beaten gold.
I tell you, children, the tree was proud;
He was something above the common crowd;
And he tinkled his leaves, as if he would say
To a peddler who happened to pass that way,
"Just look at me! Don't you think I am fine?
And wouldn't you like such a dress as mine?"
"Oh, yes!" said the man, "and I really guess
I must fill my pack with your beautiful dress."
So he picked the golden leaves with care
And left the little tree shivering there.

"Oh, why did I wish for golden leaves?"
The fir-tree said; "I forgot that thieves
Would be sure to rob me in passing by.
If the fairies would give me another try,
I'd wish for something that cost much less
And be satisfied with glass for my dress!"
Then he fell asleep; and, just as before,
The fairies granted his wish once more.
When the night was gone and the sun rose clear,
The Tree was a crystal chandelier;
And it seemed, as he stood in the morning light,
That his branches were covered with jewels bright.
"Aha!" said the tree. "This is something great!"
And he held himself up, very proud and straight;
But a rude young wind through the forest dashed,
In a reckless temper, and quickly smashed

The delicate leaves. With a clashing sound
They broke into pieces and fell on the ground,
Like a silvery, shimmering shower of hail,
And the tree stood naked and bare to the gale.

Then his heart was sad, and he cried, "Alas
For my beautiful leaves of shining glass!
Perhaps I have made another mistake
In choosing a dress so easy to break.
If the fairies only would hear me again
I'd ask them for something both pretty and plain;
It wouldn't cost much to grant my request—
In leaves of green lettuce I'd like to be dressed."
By this time the fairies were laughing, I know;
But they gave him his wish in a second; and so
With leaves of green lettuce, all tender and sweet,
The tree was arrayed, from his head to his feet.
"I knew it!" he cried; "I was sure I could find
The sort of a suit that would be to my mind.
There's none of the trees has a prettier dress
And none as attractive as I am, I guess."
But a goat, who was taking an afternoon walk,
By chance overheard the fir-tree's talk.
So he came up close for another view;—
"My salad!" he bleated, "I think so, too.
You're the most attractive kind of a tree,
And I want your leaves for my 5-o'clock tea."
So he ate them all without saying grace
And walked away with a grin on his face;
While the little tree stood in the twilight dim,
With never a leaf on a single limb.

Then he sighed and groaned, but his voice was weak—
He was so ashamed that he could not speak.
He knew at last he had been a fool
To think of breaking the forest rule,
And choosing a dress himself to please
Because he envied the other trees.
But it couldn't be helped, it was now too late,
He must make up his mind to a leafless fate!
So he let himself sink in a slumber deep,
But he moaned and he tossed in his troubled sleep,
Till the morning touched him with joyful beam,
And he woke to find it was all a dream;
For there in his evergreen dress he stood,
A pointed fir in the midst of the wood!
His branches were sweet with the balsam smell,
His needles were green when the white snow fell.
And always contented and happy was he—
The very best kind of a Christmas tree.



THE GLORY OF THE HEAVY-LADEN EVERGREENS—THE BACKBONE OF THE BEST WINTER
LANDSCAPE EFFECTS



A DELICATE BLACK LACE VEIL IS DRAWN OVER THE SKY BY THE TRACERY OF THE TWIGS, AS
THE SUN CREEPS DOWN TO THE WEST AND DUSK EFFACES THE WHITENESS OF THE SNOW

Christmas Landscapes

BY ARTHUR HAWTHORNE CARHART

IF YOU look out of your window on Christmas Day and see there a picture as attractive in its way as when the trees, shrubs, and lawn are lush with the new green of spring, you may well claim that yours is a year-around garden. If you have such a garden, you are fortunate—or far-sighted. Very few people indeed think of their home grounds and garden in terms of the winter and late fall months. Most attention is given to spring effects and the garden charms of summer.

Home grounds should be cosier in the winter time than in summer, if that is possible. There should be an expression of brightness, of warmth, of snugness. Only when one consciously plans, can this be attained; for the year-around garden, with its studied winter effects, is not the result of happy chance, but of application and planned effort.

There is another thought which might well be considered here. Perhaps your home grounds are lively, snug, and inviting and you do not see their beauty. Your eye may not be trained to look for the delicate tracery of the nude

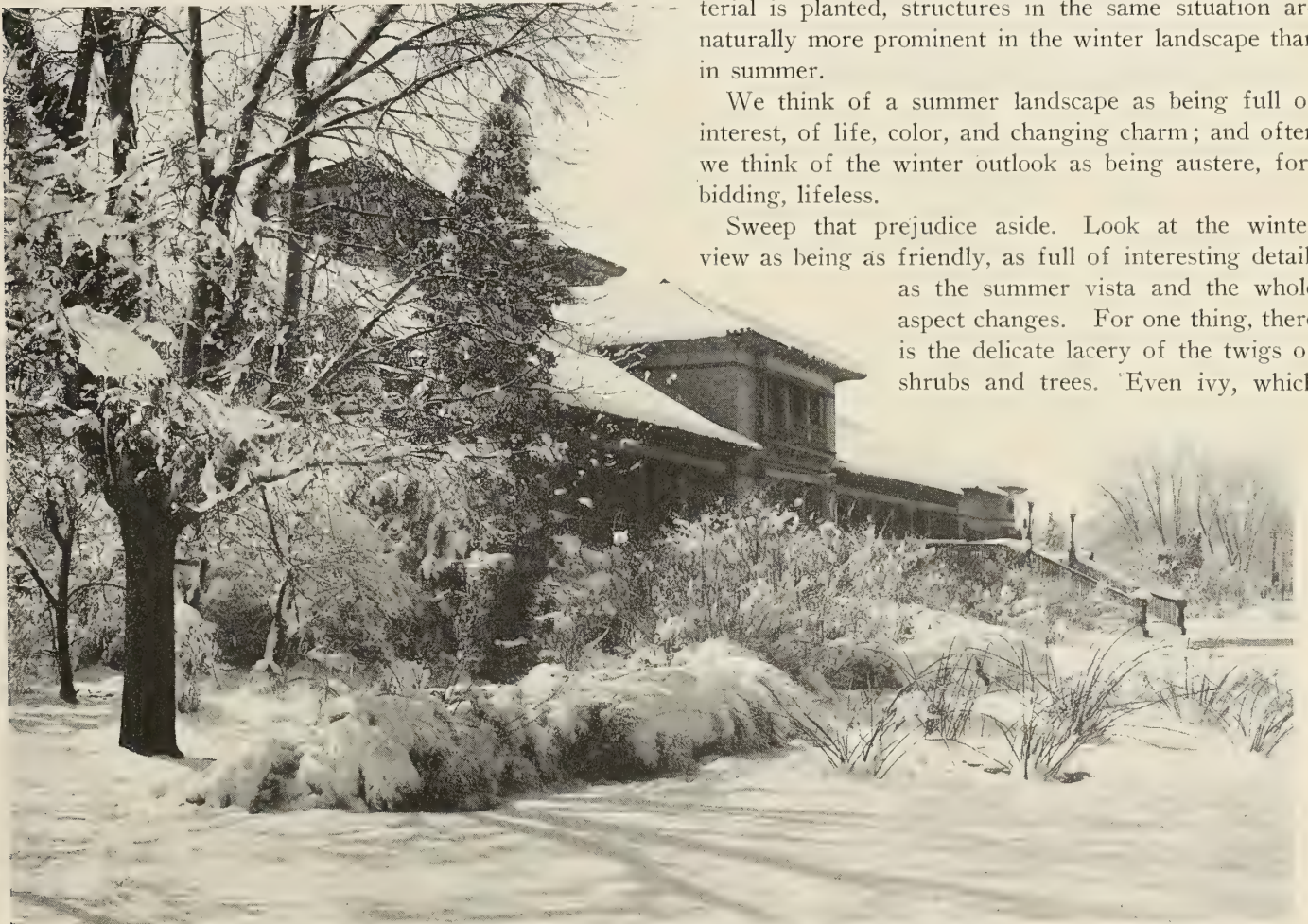
twig, to search for the little color spots of bright buds, or behold the interesting texture of a rough-barked tree. So before you discount your present garden, the trees in your lawn or the shrubbery base plantings around the house, take stock of the wealth of plant materials you have which are of good interest in winter garb. Perhaps you will find there is already no small amount of interest and beauty in your winter home landscape which has heretofore escaped your eye.

The elements which go to make up the winter landscape are not unlike those found in summer landscapes. Color, texture, mass and bulk of plantings, buildings, and other features are present both in winter and summer. The general outlines of all landscape units are much the same in both seasons. The greatest difference is not in the elements of the landscape composition, but in their qualities.

Then there is the white mantle of snow to be taken into consideration in a winter's composition; the light is different, and a winter sky is of a different quality from a summer sky. Then, too, where much deciduous material is planted, structures in the same situation are naturally more prominent in the winter landscape than in summer.

We think of a summer landscape as being full of interest, of life, color, and changing charm; and often we think of the winter outlook as being austere, forbidding, lifeless.

Sweep that prejudice aside. Look at the winter view as being as friendly, as full of interesting detail, as the summer vista and the whole aspect changes. For one thing, there is the delicate lacery of the twigs of shrubs and trees. Even ivy, which



IF WE CHOOSE, THE GROUNDS AROUND THE HOME MAY BE AS CHEERY WHEN WRAPPED SNUGLY IN THE WHITE BLANKET OF THE SNOW AS WHEN IN FULL FLOWER AND LEAF

clings to the side of the stucco wall, traces a filigree pattern of brown that would baffle an artist to duplicate. Twig texture in the winter landscape is certainly one of its greatest charms.

If a sour-gum tree or a native horizontal-limbed hawthorn is massed with picturesque sumacs, over which lifts a higher section made up of the twigs and limbs of a Kentucky coffee-tree, there is produced an interest in twig and limb forms that is never present in summer time. The extreme-shaped habits are most readily discerned and carry the most interest. These are of that group.

No winter landscape which is planned to give interesting twig and limb features should be made up entirely of trees of unusual growth habits. The rough, unkempt stems of the prairie nine bark, the viburnums, the spireas, and the twiggery of the American elm are as desirable in the texture of the winter landscape as the more extreme forms. Unusual, or what might be termed emphatic, forms should be used principally as texture accents in the winter outlook. Certainly the stubby, angled branches of the coffee-tree, the sumac, and the striking form of the horizontal-limbed hawthorn give a distinctive touch to the twig tracery of the shrub and tree masses that should be used judiciously rather than too freely.

We would be neglectful if we left this subject of twig

tracery in the garden and home grounds without considering two phases of its charm which may escape the unobservant eye. The first is the lacy effect of the twigs on the skyline when the sun creeps down to the west and dusk effaces the whiteness of the snow. Then, if at any time, one appreciates the beauty of the tree skeletons and is thankful that there is a season when these intricate branchlets are not blanketed by a canopy of leaves. The sun glows richer copper, the clouds become less ardent in their coloring, and finally deeper dusk all but blots out the view. Still, even after the last faint afterglow has faded and passed, the fringe of twigs on the skyline continues to give an exquisitely embroidered edge to the masses that have lost their identity and melted into one unified heavy shadow.

The other value that the naked twigs give to the snowy landscape is their daytime shadow. When a new snow is on the ground and a chilly but bright sun streaming light over the countryside, the pattern of the twigs on the snow becomes an unmistakable attraction in the outlook. It is ever-changing, as the sun swings around his course, and often is the one element which breaks and softens the lines of a formal garden panel, severely white under a snow blanket.

But twigs, limbs, and trunks give other life and warmth



THE VALUE OF DAYTIME SHADOWS IN THE SNOWY LANDSCAPE IS EMPHASIZED WHEN A NEW SNOW IS ON THE GROUND AND A BRIGHT SUN, STREAMING LIGHT OVER THE COUNTRYSIDE, TRACES THE SHAPES OF NAKED TWIGS OVER ITS BRILLIANT SURFACE



"THE FROZEN SPELL OF SOLITUDE SUPREME"

to the landscape besides that found in texture and form; for there is hardly a shrub or tree which has not some color to add to the winterscape, while many have distinct brilliancy of bark that makes lively spots of color in the masses of grayer twigs. Dogwoods of several varieties have highly colored bark. There is *Cornus stolonifera*, a native; *Cornus alba* and *Cornus sanguinea*, and others produce a red spot in the winter outdoors and glow warmly in contrast to grays of other shrubs and the white of the snow. One could almost make a complete picture, with a snug white house with green shutters, around which was grouped evergreens, the red of dogwoods, and some gray-toned shrubs as "blending" material. Or the house might be a warm-toned brick, with just the right-colored dogwood massed near the foundation, and in contrast to that the white snow blanket from which would lift the conical green accent points of a group of small spruces or firs; and there are other dogwoods of gray or bluish tint or brilliant yellow. As yellow as the golden-barked dogwood is the twig growth of *Salix vitellina*, the golden willow. The variety *Britzensis* is the bronze-barked willow. The wahoo twigs are bright green in winter; some of the rose stems are a deep red, green, or brown, while the nine bark is orange yellow and gray. There are many other bright-twigged shrubs and trees that liven the landscape with color when the frost has stripped the leaves from the branches.

Another color element in the winter landscape exists in the fruit and berries of certain shrubs, which hang on through the months of snow and frost. Many are sought by birds, and

another feature of life is added if feathered neighbors come to your garden and grounds to eat berries there. Japanese barberry, the wahoo, some of the hawthorns, the frost grape, roses, the Siberian pea, snowberry and Indian currant, the privets, high-bush cranberry, and sumacs retain fruits through the winter months or until after snows have come.

Still another color element, as well as texture feature, is found in the leaves of trees which hang on through the winter. Some of the oaks especially give color to the landscape by retaining their bronze-colored leaves. Maples of the hard-

maple group and occasionally cottonwoods and the Russian olive retain leaves until late fall, the latter often retaining its small fruits as well.

One element of color we may control entirely. That is the color which may be added to the garden in pottery, terra-cotta, or other structural detail. Picture a set of garden steps leading from one level of the garden to the other. Place on the lower level, just where the steps start up and to one side of that point, a great urn of warm red tone. Plant a small clump of snowberries at a point where some sprays will hang in front of the warm-colored vase, and then back the whole with a clump of evergreens of varied shades of green. This is but one suggestion. Color warmth from the use of structural features offers endless possibilities.

Evergreens, either of the broad-leaf or conifer group, always add beauty to a winter landscape. Combined with shrubs which have colored twigs during the winter and with structural features, evergreens are, perhaps, the



THE MIRROR OF THE SNOWSCAPE—SOFT REFLECTIONS IN THE ICY WATER

most important feature of the winter grounds. Mass, accent forms, texture, color—all these and more are found in evergreen groups when properly planned. Whole essays might be written of this one feature of winter landscape, but just a suggestion here must suffice. Evergreens are the backbone of many of the best winter effects.

And then there is the sky-line. So little attention is generally given to this very important feature that one rarely sees a sky-line which exhibits such character that it dominates an outlook. Accent points of spire-shaped conifers, the lacy twig fan of the elm, the gangling, angular coffee-tree and walnut, and the horizontal-limbed hawthorn all suggest interesting features in the sky-line procession. These are materials for the higher points. Combined with lower, finer shrub growths and with the outline of structures, these plant elements will often produce a very pleasing picture and an interesting sky-line.

Running water, a stream, perhaps, where the darker pools are in sharp contrast to the ice edging, is always a pleasing part of a winter landscape. Unfortunately, such a feature is rarely possible except in the broader landscape compositions.

Composition principles remain the same in winter landscapes as in summer. The same balance of line and mass, and even of color, is demanded in the winter picture as in the summer view. Making an attractive winter garden is mostly a matter of recognizing that winter puts few more limitations on the designer than does summer, and probably the reason we do not have more attractive winter gardens is because we do not recognize the many materials which can be made into a pleasing winter picture. While different media combine to express the beauty of the win-

ter landscape, the difficulty of building picturesque settings lies, not in the lack of available material, but rather in the proper choice from the great wealth and variety of material offered. Many of the handicaps in making winter-garden pictures lie not in the grounds, but in our own imaginations.



PINE NEEDLES AGAINST WHITE, DRIFTING CLOUDS

ter landscape, the difficulty of building picturesque settings lies, not in the lack of available material, but rather in the proper choice from the great wealth and variety of material offered. Many of the handicaps in making winter-garden pictures lie not in the grounds, but in our own imaginations.

Twig-tracery shadows on the snow; feathery branchlets and spiry evergreens cut as cleanly as a cameo against glowing western sky; the graceful curve along the snowy bank of a flowing stream; pine needles against white clouds; snowy branches; brilliant-hued bark; clean, white snow panels; shrub groups aflutter with birds hunting berries and seeds; dark shadows under pine and spruce, contrasting with the whiteness of the snow; brilliant, warm-colored structural fea-



THE SUN GLOWS RICHER COPPER, AND FINALLY DUSK ALL BUT BLOTS OUT THE VIEW

tures, are but a few of the elements one might think of in connection with the Christmas landscape which make it not a cold, repelling bit of the outdoors, but a lively, welcoming place of the open air. Whether or not we will have such a place to look out upon, to greet us with promise of other joys in the spring and summer, depends entirely on ourselves. If we choose, the grounds around the home may be as cheery when wrapped snugly in winter's blanket as when in full flower and leaf.

Is it not more worth while to have cheery home grounds to look upon when winter comes and days are sometimes bleak than to have a pleasing landscape, good for only a few months, in the early summer? When, as Whittier puts it, "The gleaming tree-bolls, ice-embossed,

hold up their chandeliers of frost." If a cheery Christmas landscape appeals to you, some day you may have a year-long garden—a garden and grounds as interesting at Yuletide as during the languorous summer months.



Bayberry Candles

BY CORA C. BUTLER

*"The Christmas Eve that's lighted by
A candle made of bay
Is one whose joy and blessedness
Will never fade away."*



THOUGHT they were lily stalks, didn't you, these bayberry candles? Set you dreaming of snow-white blooms? Lovelier than that: From the tip-tapering top there'll be a hallowed miracle, candle-glow! Hallowed because they are more than bayberry waxen stalks—they're Christmas candles. Touching flame to them shows not only 2,000 years' inheritance from light worshipping ancestors, it links our spirits with all Christendom in an "understanding of the preciousness of love, and the need to keep it true."

"For once, on a December night,
An angel held a candle bright,
And led three Wise Men by its light
To where a child was sleeping."



A CLUSTER OF DELICATELY COLORED, FRAGRANT BAYBERRIES

his coming placed candles in the window that he might not stumble.

Germans prepared a feast and left lighted candles all night, that the Virgin Mary and the angel who passes while the people sleep could find food.

Scandinavian church service was lighted with candles only, on Christmas Eve, and candle-light in the windows guided "Kristine" in bringing gifts.

England's Yule candle glimmered on the festive board to the accompaniment of the Yule log's crackle.

From this origin grew many beautiful Christmas-candle customs:

In Ireland only a person named Mary may snuff out the candle burning on Christmas Eve.

An Austrian legend told of the Christ-Child's going all over the world on Christmas Eve, carrying a bundle of evergreens. All who longed for

In Croatia hymns were sung while the Christmas Eve candle burned, and each child in turn took the lighted taper from the father's hand, repeating "Christ is born." The Christmas Day candle was lighted and, after a brief prayer, blown out and pushed into a cup of grain, and whichever grain clung to the candle promised the best crop for the coming year. A third candle was burned at the close of the festival.

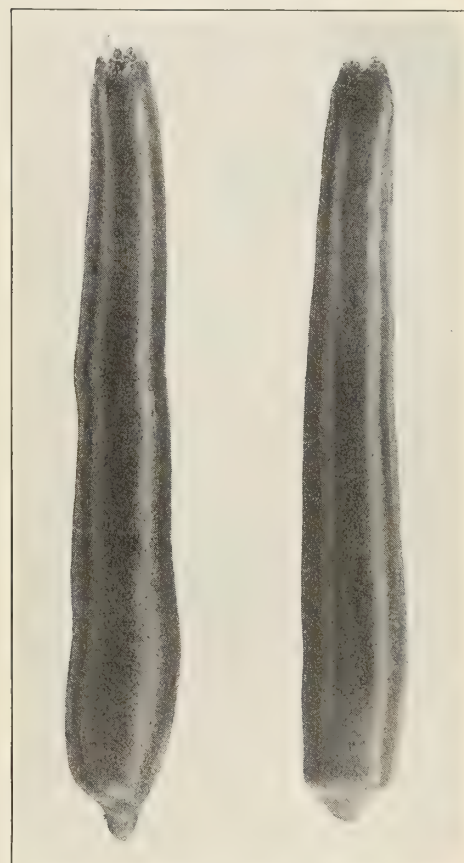
The French carried lighted color-streaked candles through the streets to midnight mass on Christmas Eve.

A Holland youth, leading singers of the town, early Christmas morning, carried on a pole a single star lighted from within by a candle.

The Puritan's Christmas candle contained a quill of gunpowder and was always timed to go off at midnight. The family sat around the kitchen fire waiting for the explosion that would send a trail of glowing powder to the ceiling.

It was our own colonial custom to place a candle on the Christmas tree for each member of the household and any sojourning guest. These were lighted on Christmas Eve by the head of the house as soon as the Pole Star was visible over the evening's horizon — "little beacons to guide them on their way until another Christmas Eve."

Also, in colonial days, grew the custom of making bayberry can-



LIGHT THE BAYBERRY CANDLE;
SNUFF IT OFTEN, TOO;
FOR THE BRIGHTER IT BURNS,
THE MORE LUCK 'Twill BRING YOU

dles from the wax on the bony nutlets of a shrub of many names—candleberry, myrtleberry, bayberry, wax myrtle. However, the botanical name, *Myrica*, is fragrant, like the plant itself. Clinging its sand-loving roots to a seaside home, the bayberry seldom wanders inland.

After the leaves fall, the gray branches hold close their lighter gray drupes (*M. Carolinensis*), sharing with them a balsamic odor. In late autumn these granular, waxy drupes, or berries, were gathered, thrown into boiling water, the wax skimmed off and refined to a transparent green hue. This, proportioned with tallow, made brighter candles than the old "tallow dips," emitted little smoke, and threw off a pleasing fragrance.

Candle-making is now one of the fine arts—far different from old "dippings." Every one may express joy and gladness with candle-light, not becoming a tallow or wax chandler either. There are tall, tapering candles and fat, squat ones—product of the bees of Paradise or sweetly fragrant with bayberries. 'Tis the flame, symbol of truth, that gives them quality.

But they must be bound and wreathed with Christmas greens and kept burning through the midnight hour, when cocks crow, bees sing, cattle kneel, and sheep go in procession; when "no planets strike, no fairy takes, nor witch hath power to charm."

And there's only one way to light the Christmas candles, whether they be silver-sconced on either side of the mantel's decoration or in candelabra settings on the walls; whether they flank the festive silver or gleam beacon-like from fir-tree boughs; whether they light the Christ-Child's passage or lead worshipers to midnight watch. This is the way: Get you two flint rocks and, just as the evening star appears over the horizon, strike your fire down from heaven to set your torch aflame.

"Then be you glad, good people,
At this time of the year;
And light you up your candles,
For His star, it shineth clear."

Forest Triumphant

BY ORVILLE LEONARD

WHAT would it profit man to live outside
The limit of his years? With loved ones gone,
Like a last rear guard, he would pace forlorn
Through a drear waste, stripped bare of friends who ride
Ahead of him, though on the selfsame trail
That he must some time follow, but alone;
Peering with dim old eyes on youth unknown,
Who watch with heedless eyes his powers fail.

Yet would I brave all this to live to see
The burgeoning of forests where a waste
Stands now; to watch the slim green sapling grow
Into the mighty-boled, wide-spreading tree;
And mark the leaf-wave creeping without haste
To lip the arid lands with its green flow;
To tread a lofty forest, vast and still,
Triumphant over man's destroying will.



National Photo

THE HORSE CHRISTMAS TREE

Old Dobbin enjoys his Christmas dinner, and from a real Christmas tree, too, erected and trimmed for his special delectation. The serving of Christmas dinner for horses was inaugurated some years ago, but it remained for a Washington woman, Mrs. Ira Bennett, to feature the Christmas tree from which to serve it. This tree was decorated by the committee of which she was chairman, under the auspices of the Animal Rescue League, and it was loaded with ears of corn, golden yellow carrots, and gleaming red apples, with plentiful supplies for its replenishment, as needed, near by, together with bales of fresh hay. And then the market horses were invited to the feast! Several hundred horses had their Christmas dinner, and the custom of the "horses' Christmas tree" has now become a regular part of the holiday celebration in many cities.

The Forest Ranger's Christmas

By Wright Field

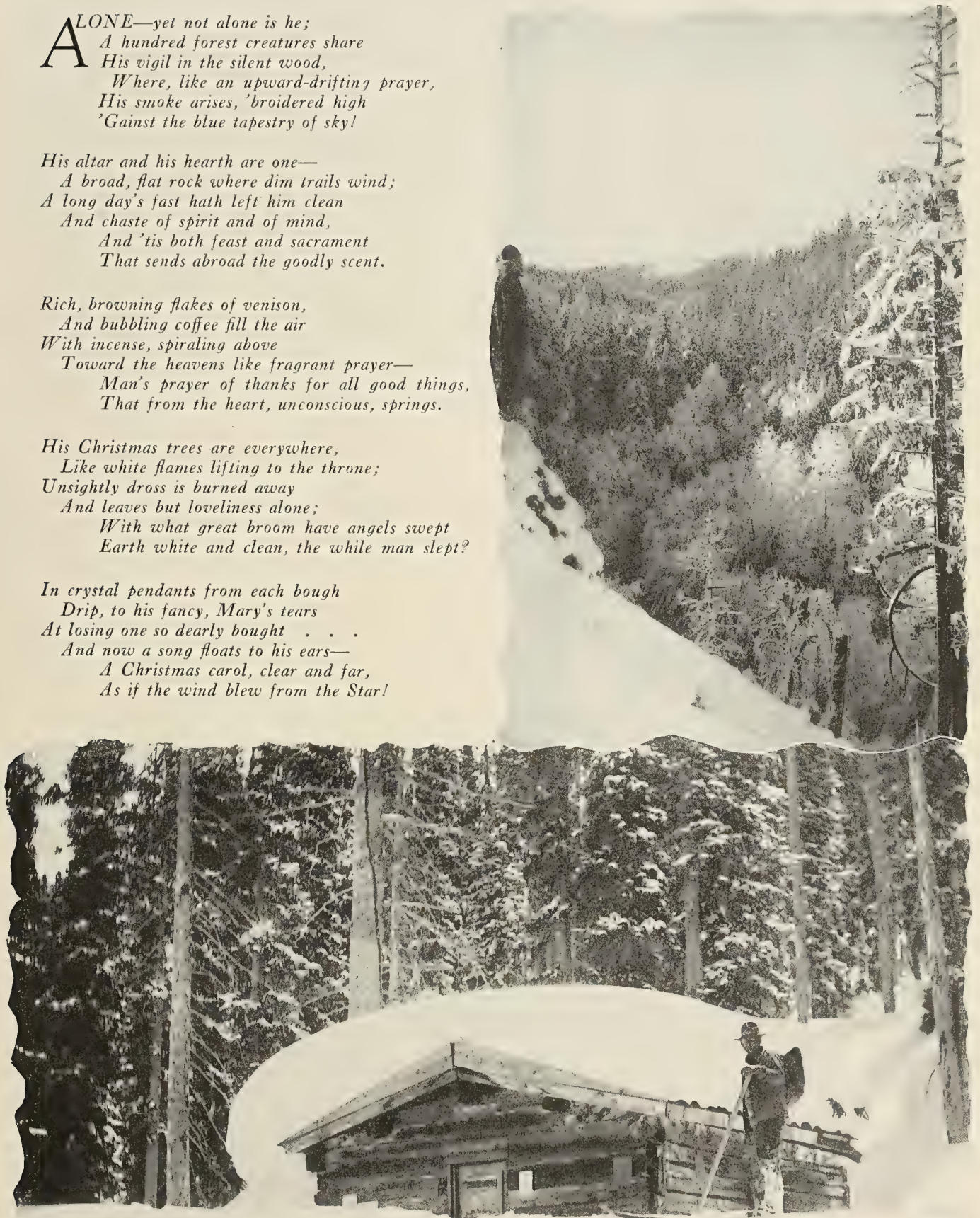
ALONE—yet not alone is he;
A hundred forest creatures share
His vigil in the silent wood,
Where, like an upward-drifting prayer,
His smoke arises, 'broidered high
'Gainst the blue tapestry of sky!

His altar and his hearth are one—
A broad, flat rock where dim trails wind;
A long day's fast hath left him clean
And chaste of spirit and of mind,
And 'tis both feast and sacrament
That sends abroad the goodly scent.

Rich, browning flakes of venison,
And bubbling coffee fill the air
With incense, spiraling above
Toward the heavens like fragrant prayer—
Man's prayer of thanks for all good things,
That from the heart, unconscious, springs.

His Christmas trees are everywhere,
Like white flames lifting to the throne;
Unsightly dross is burned away
And leaves but loveliness alone;
With what great broom have angels swept
Earth white and clean, the while man slept?

In crystal pendants from each bough
Drip, to his fancy, Mary's tears
At losing one so dearly bought . . .
And now a song floats to his ears—
A Christmas carol, clear and far,
As if the wind blew from the Star!





A Merry Christmas for the Birds

BY EDWARD HOWE FORBUSH

LET'S feed the birds this winter, not only because it benefits them, but because it's good for us. The highest form of enjoyment lies not in ministering to our own desires, but in caring for and helping our fellow-creatures; and birds certainly are among the most lively and interesting of fellow-creatures. Feeding the birds in winter gives an added zest to life, whether on the lonely farm, where the snowy fields grow monotonous to the weary eye; in the isolation of the forest, where winter winds wail among the trees, or in village or city; for even there birds may be attracted by one who knows how. Bird-feeding in winter provides a never-ending entertainment for women and children. It cultivates their humane instincts and brings them happiness.

The holidays are known over the civilized world as a time of good cheer—a time when we make merry with our friends and wish them joy. Are not the birds our friends? Why not give them a Merry Christmas? Farmers in Scandinavia are accustomed at this season to fasten a sheaf of grain to the roof of a barn or other outbuilding to provide a Yuletide feast for the birds. In the bleak, snowy win-

ters of New England, people rig up a wide shelf outside a window, mount a little evergreen tree upon it, tie bits of suet or fat to the limbs, spread hayseed or chick-feed upon the shelf, and so provide holiday entertainment for their feathered friends. Some persons set out old tables in the yard, placing plates filled with seeds upon them.

Boys and girls on snowshoes go far afield, visiting woods, byways and meadows, trampling down the snow, scattering seed or crumbs upon its compacted surface, and tying scraps of meat, fat or suet on woodland trees; and later they visit these feeding stations from time to time to renew the supply and to watch the birds that come to partake of their bounty. This is the simplest form of bird-feeding, for which chaff from barn floors containing grass seeds and weed seeds, also bits of fat and meat from the table



A LIVELY, CHEERY LITTLE CHRISTMAS VISITOR

or from trapped animals, furnish food "without money and without price."

The practice of throwing down seeds or crumbs on the snow, however, results in some waste, and often the food thus put out becomes covered by snow or ice, so that the birds cannot get it. If it can be spread under the roof of



Photograph by Harry Higbee

A BIRD-LOVER PREPARING CHRISTMAS DINNER FOR THE BIRDS BY SCATTERING SEED ON THE SURFACE OF THE TRODDEN SNOW

a shed, lean-to, poultry shelter, or even in a tight dry-goods box, with one side open toward the south, the birds will have shelter from cold winds and the food will rarely be covered by snow or ice.

Many feeding appliances designed to give the birds both food and shelter are now on the market. Perhaps the best of these is the weather-vane food-house, made of cypress boards, mounted on an iron rod, and revolving on an iron socket; it always swings with its opening away from the wind. It has a large food receptacle at the top, under a weather-proof projecting roof, and a hopper through

and their habits studied at leisure. Such a box is shown in Mr. Higbee's photograph, representing a scene at the sanctuary of the Massachusetts Audubon Society at Sharon, Massachusetts.

Many people, having arranged a feeding place with all modern improvements, complain that the birds do not patronize it. It is not always enough to merely put up our feeding stations. The birds may find it and come quickly, or they may not; if not, we must take steps to entice them.

The normal feeding place for ground birds is the

which the seed feeds down gradually; also hooks or wire cages for suet. Such a feeding station will not ordinarily require filling or other attention oftener than once a month, and the food will be kept dry and never will be wasted. Squirrels and cats must be kept out of this appliance by means of a broad metal flange about the pole at least six feet from the ground. Otherwise cats are likely to catch some of the birds attracted to it, and squirrels, not satisfied to take the grain or seed as it flows down, may gnaw into the food receptacle and spoil it.

Some prefer to have an enclosed glass box projecting into a house window, thus affording the birds excellent shelter and bringing them practically into the house, where they can be watched



Photograph by A. H. Torrey

LITTLE HORNED LARKS—HAPPY CHRISTMAS BIRDS—FIND THE FEAST AND GORGE TO THEIR HEARTS' CONTENT

ground; and if our feeding station is raised much above it, we may have to attract the birds near it by scattering food on the ground and making a food trail to it. Also, the arboreal birds may not come to it if there are no trees near. In that case we can set up a small tree or two near by; then feed the birds on the trees, and they will soon find the feeding station. When the tree birds have

at the window to watch the birds as much as they please, as birds cannot see through these curtains from the outside.

In attracting birds to a feeding station it is a good plan to begin early. It is well to commence to feed in October, when the great flood of migrating species is sweeping southward. Thus you will persuade some of them to remain with you for the winter, for birds like to live in winter where they can find a sure supply of food during severe weather and long storms. If you attract them early, even though they seldom appear at your feeding station, they will be there in some numbers when the snowstorms begin.

Birds will eat almost anything edible in times of stress, but to be sure of attracting certain desirable species one must know what food they like best. From the experience of many years I have culled the following:

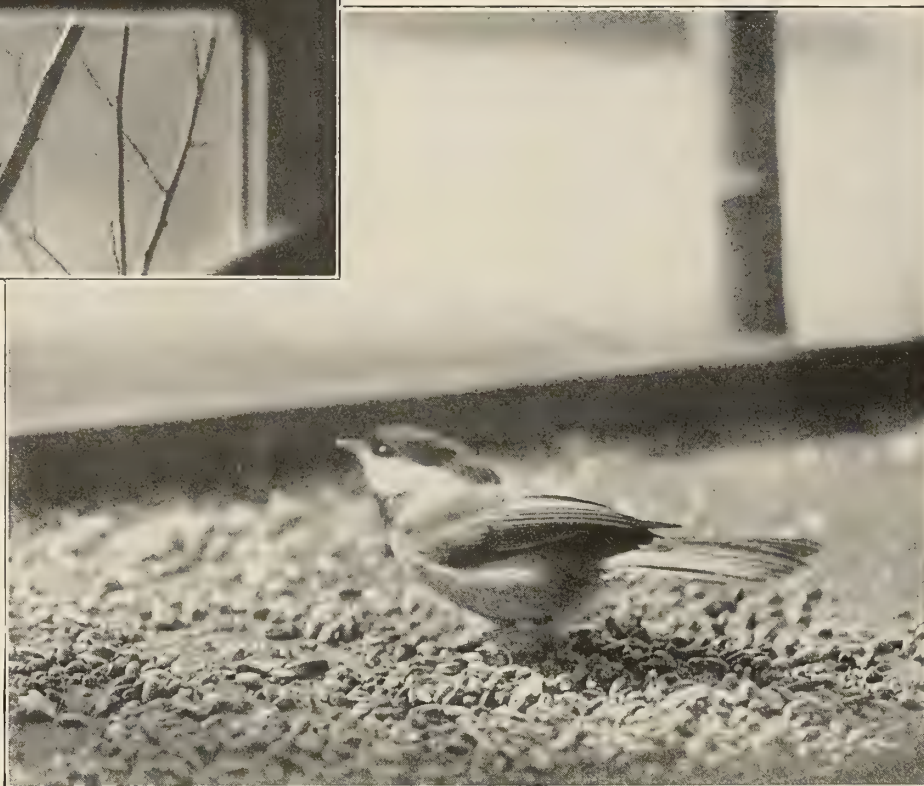
For most of the smaller seed-eating birds, fine chick-feed, such as poultrymen feed young chicks, is excellent. Millet seed, especially golden millet



THE INTERLOPER

found it, the ground birds will follow them.

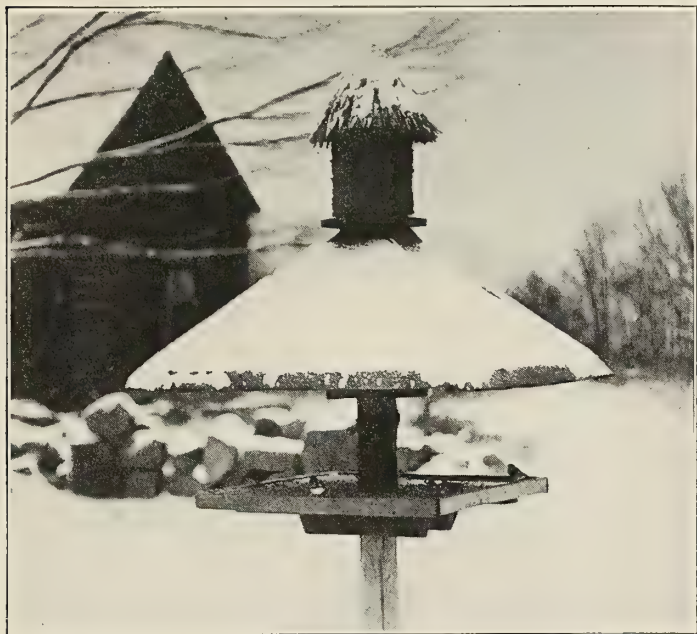
In attracting birds to a window shelf or box, one should first place food on the trees in the vicinity; then stretch a wire from the nearest tree to the window; hang a sliding food shelf on the wire, or even tie two pieces of suet on the opposite ends of a string and hang that over the wire at the tree, wrapping it around the wire to hold it; and when the birds have become accustomed to feed there, move the food along the wire, day by day, until the birds have followed it to the window. When even a single pair of birds has reached the window, others will follow them there. Having now attracted them to the feeding place, we must never frighten them by quick movements of the head or hands or by loud noises. If they show fear and refuse to eat when watched, sash curtains hung before the glass will enable the house-inmates sitting



Photographs by Harry Higbee

THE CHICADEE, FEEDING IN THE WINDOW BOX, LOOKS UP IN PAINED SURPRISE AT THE NERVE OF THE RED SQUIRREL, WHOSE EVIL INTENTIONS ARE CENTERED ON THE SUET CONE, HANGING TEMPTINGLY NEAR

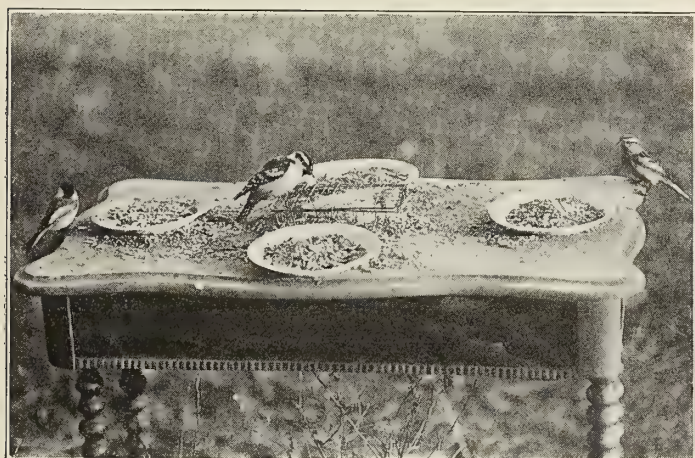
or Japanese millet, attracts practically all sparrows and horned larks. The beautiful evening grosbeaks prefer seed of the box elder or the pits or stones of the wild cherry or choke cherry, but they will take seed of sunflower, maples, locusts, flowering dogwood, frosted apples, and the fruit and seeds of Japanese crabapple. The pine grosbeak is fond of hempseed, sunflower seed, mountain



Photograph by Harry Higbee

A FINELY CONSTRUCTED FEEDING SHELF, PROTECTED FROM THE WEATHER BY A SLOPING ROOF

ash and honeysuckle berries and pieces of apple. The rosy purple finch likes to spend the winter wherever it can get sunflower seeds; crossbills like salt pork or pork rind; redpolls and siskins are fond of millet and bird seed, but siskins often prefer cracked butternuts to any other food; goldfinches come to the seeds of sunflower and cosmos; chaff and millet seed attract the snow bunting; myrtle warblers will come to bay-berries; mockingbirds are fond of chopped figs in winter, and some have developed a liking for the Japanese barberry; hard-boiled eggs, boiled rice, and cracked walnuts attract them; blue-jays come to suet, sunflower seeds, chestnuts, and corn; mourning doves and bob-whites seem to prefer buckwheat to all other grains; chickadees are the chief suet-eaters, but seem to prefer butternuts to all other food; nut-hatches and woodpeckers eat meat or suet, but prefer ground peanuts or peanut butter; in winter or early spring

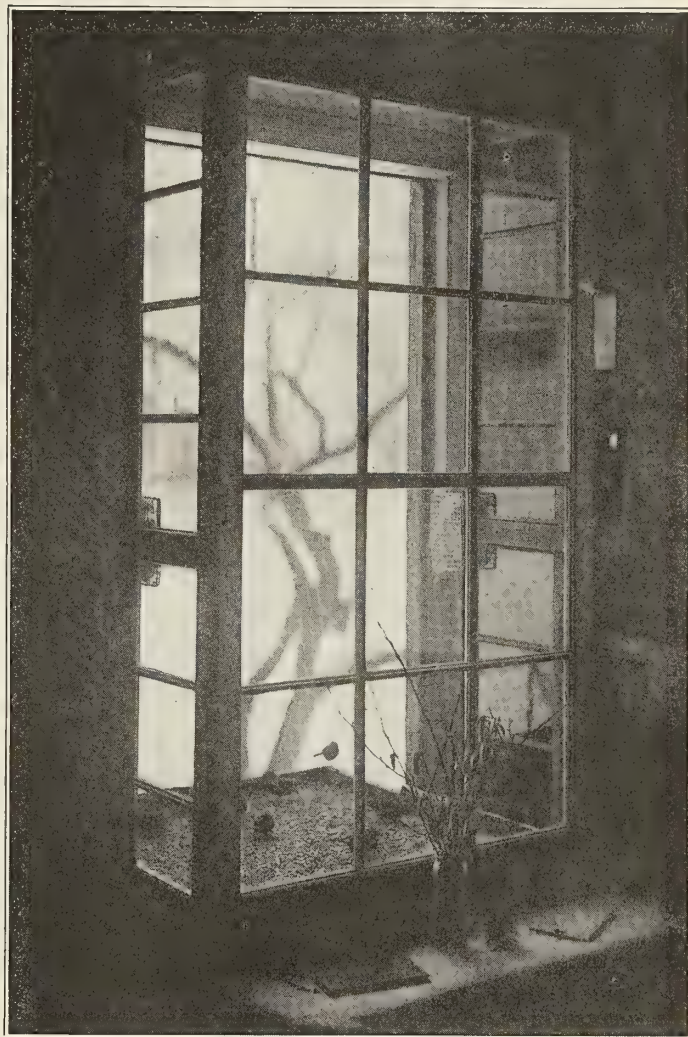


Photograph by Harry Higbee

THREE CHRISTMAS GUESTS—A CHICADEE, A DOWNY WOODPECKER, AND A TREE SPARROW—ENJOY THEIR DINNER AT A TABLE PREPARED 'SPECIALLY FOR THEM

robins will come to elderberries or barberries saved through winter, and often will take cheese curds or "Dutch cheese" from ground or rocks. Practically all the insect-eating birds prefer doughnuts to bread crumbs in winter. Scraps and crumbs from the table, the bony framework of the Christmas fowl or turkey, broken rice, popcorn, cracked corn, hominy, rolled oats, whole oats, rye, barley, broken squash seeds, and many weed seeds are useful. People living in the country can easily raise all the seeds that they require.

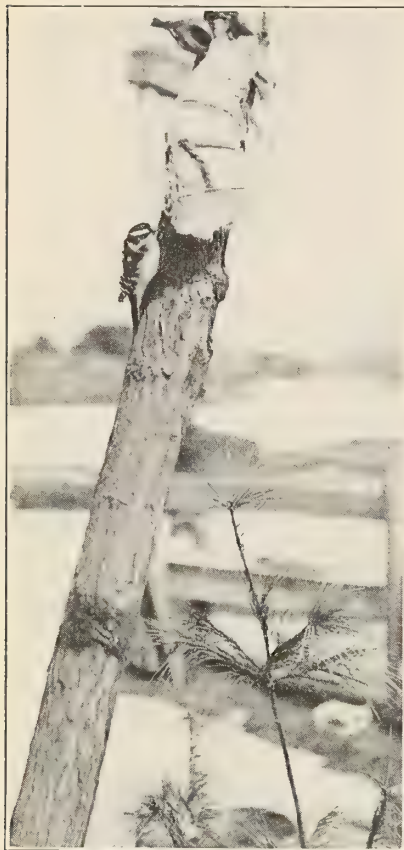
When you have lured many birds to your feeding station, others that do not feed there will come, attracted by



Photograph by Harry Higbee

THE WINDOW BOX BUILT INTO THE ROOM OFFERS SPLENDID PROTECTION AND INSPIRES CONFIDENCE IN YOUR BIRD VISITORS. SUET RACKS ARE HUNG AT EACH SIDE

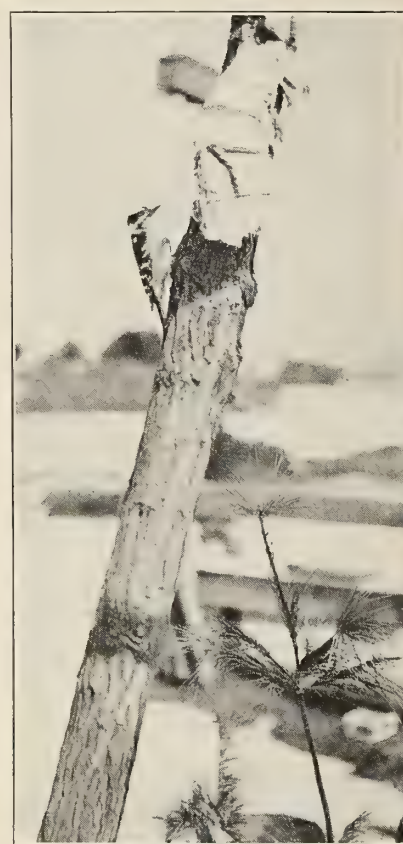
the merry company, for birds are sociable, gregarious creatures. But where the righteous dwell, Satan comes also. As soon as the station becomes popular with the birds, their enemies are sure to appear. Dogs, cat, hawks, owls, butcher-birds, and other enemies may be expected. A high fence of wire netting will checkmate cats and dogs. Squirrels are so destructive that they must be shot or else trapped and kept in cages. They will tear to pieces netted suet bags or even wire suet cages made to protect the suet against their rapacity. They destroy the eggs and



CHICKADEE AND DOWNY WOOD-
PECKER BUSY AT THE FEED-
ING STATION

young of birds and occasionally catch and kill full-grown birds. We can check the squirrels, but the birds' winged foes are likely to baffle our best efforts to control them. However, we can provide a place of refuge to which the little birds can fly when pursued and in which they can roost at night in tolerable safety. A dense, tangled, thorny thicket or hedge makes an excellent refuge for small birds, but a great heap of brush or branches is still better. In winter this should be covered with pine, spruce, or hemlock branches to keep out the snow. If flowering vines are

visitors at our feeding stations; but when the snow lies deep on the ground or when the ice storm has encased all Nature in its crystal sheet, then we shall find our stations crowded with the eager birds, and then we may save the lives of some that might otherwise succumb to the "white death." They may come many times a day to the food that we provide for them, but most of their daylight hours will be spent in searching for hibernating insects on our shrubs and trees or in eating weed seeds in garden and field. They will depend upon our bounty to save them



APPROACHING THE SUET FEED-
ING STATION WITH A BIT OF
SUSPICION

encouraged to grow over it in summer, it will become a "thing of beauty," and the birds will dive into it to escape from their enemies at the first alarm.

It is an excellent plan to erect a few nesting boxes on trees or buildings. They should have small entrance holes, not over 1½ inches in diameter, placed near the top, which should overhang them. These make good, safe winter sleeping places for chickadees, nuthatches, and downy woodpeckers. A little cotton or wool in the bottom of each will make them more desirable for winter quarters.

"But," the carper exclaims, "if you feed the birds, you will pauperize them!" Have no fear; the birds will earn their own living. They patronize our feeding stations only when they need extra food. While the ground is bare and there is no ice on the trees, we shall have few feathered



ELEVEN TREE SPARROWS ENJOYING THE
HOSPITALITY OFFERED BY THIS FEEDING PIT

from starvation, but this only in times of great need.

There is one bird that many people do not care to feed, one that sometimes in the city will monopolize the feeding station to the exclusion of most other birds. The English sparrow may be discouraged by a feeding shelf hung from spiral springs or rubber bands. He does not like an unstable platform, while the native birds seem to have no objection to it. It must be so adjusted as to vibrate or teeter when he lights upon it.

Having now provided for the needs of the birds and given them shelter and protection from their enemies, we shall find them often during the snowy season in our doorway. In southeastern Massachusetts such preparations may bring from 50 to 100 birds about the house. The juncos, flashing their white tail feathers; the merry chickadees; the brilliant jays; song sparrows,

with their spotted breasts; tree sparrows, with the black one-spot of hearts on their gray breasts; a few ruddy fox sparrows; a pair of dark swamp sparrows; nuthatches, both red-breasted and white-breasted; downy and hairy woodpeckers—all gather to the feast; and you may find a few quails and a ring-necked pheasant scratching about the dooryard, attracted by the feeding birds. Those little feathered jewels—the golden-crowned kinglets—sometimes hover near and myrtle warblers come to the bayberries. Flickers, goldfinches, crossbills, and purple finches come and go. One winter we had a towhee; and even a wintering mockingbird is a possibility, as a number of these birds winter along the Massachusetts coast. Then there are redpolls, horned larks, and meadowlarks; and last, the evening grosbeak. A Massachusetts lady lured a band of from 25 to 50 evening

accepted you for his friend and has nestled down with his little cold feet in the warmth of your palm, you will have a different feeling for the birds ever afterward. They will add to the attractiveness of your place in winter. Your children will love them and will "carry on" when, in the fullness of time, you have gone to your reward.

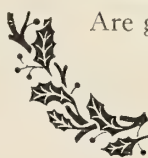


Photograph by George McNeil

THE FRIENDLY CHICADEE. ONCE YOU MAKE FRIENDS WITH BIRDS, THEY WILL COME TO YOU EVERY WINTER

A Plea for the Holly Tree

Deep in the shadow of the woods,
Where oaks and pines and many trees
Stand guarding its slim, lovely growth,
The holly, with its pointed leaves,
Grows up apace toward the sky.
As though it thought to steal the stars
For blooms to match its pointed leaves.
Tended by God's devoted hand,
It lives and thrives the whole year through,
When falling leaves of sister trees
Bid us be sad and mournfully
To sing the flowers' requiem,
Behold! the Holly tree puts forth
Its blossom—fruit in scarlet hue—
And stands revealed, a beauteous thing,
In honor of the glad Yuletide,
The day of days, the joyful day
When came the Babe of Bethlehem.
And how do we repay this gift
Of forests old and glorious?
Ruthlessly do we hack it down.
The graceful branches, berry-hung,
Are hewed away with life itself.
Have men no pride, no hearts to feel
The pity of this shameless deed?
Oh, can we not, ere 'tis too late,
Do ought to save this cherished tree,
Whose berry-blossoms, scarlet songs,
Are glad hosannahs to the King?



Photograph by F. Fabian Smith

WHEN ONCE A CONFIDING WILD BIRD HAS NESTLED DOWN WITH HIS LITTLE COLD FEET IN THE WARMTH OF YOUR PALM, YOU ARE "SOLD" TO THE BIRDS FOREVER

grosbeaks to the roof of the veranda, where they came winter after winter.

When once you have made friends with birds, they will come to you every winter, and you will have their company so long as you continue to supply them food. You may even entice a chickadee or a nuthatch to feed from your hand; and when once this confiding wild bird has

CHRISTMAS in the

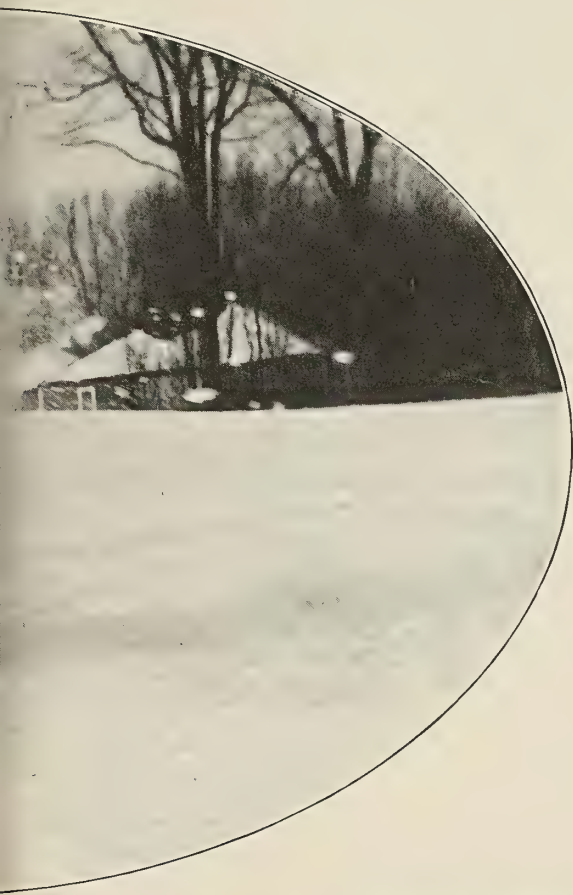


The bob sled, flying
tumbles its joy
blanket



"All green was vanished save of pine and yew, that still displayed their melancholy hue"

WINTER WOODS



h the frosty air,
to out on a
ite



"Look how the landscape glitters, wide and still, bright with a pure surprise"

CHRISTMAS *in the* WINTER WOODS



The bob sled, flying through the frosty air,
tumbles its joyous crew out on a
blanket of white



"Look how the landscape glitters, wide and still, bright with a pure surprise"



"All green was vanished save of pine and yew, that still displayed their melancholy hue"



What About the Winneshiek Bottoms?

MUCH is being said and written about the proposal to drain the Winneshiek Bottoms. What and where are the Winneshiek Bottoms, and to what extent does the proposal to drain them run contrary to wise conservation? Are the lands which will be reclaimed by drainage good agricultural lands and are they needed by American agriculture?

These are vital questions to be considered in connection with this drainage project. Dr. Harry C. Oberholser, of the Biological Survey, has recently made a careful examination of these lands. In order that readers of AMERICAN FORESTRY may have a clear grasp of this urgent situation, parts of his report are presented. Before quoting Dr. Oberholser, however, it is desired to dispose of any claim that these lands are needed now or in the near future for the agricultural development of the states immediately surrounding.

The Winneshiek Bottoms are the low-lying, marshy lands immediately adjacent to the Mississippi River, extending northward for thirty miles from Lynxville, Wis.; so that their reclamation would tend to add to available agricultural land mainly in Minnesota and Wisconsin. That agricultural development in these states has not yet reached a point where expensive drainage projects are necessary to make available agricultural lands is pretty conclusively shown by the facts as given in a recent Forest Service Report, which states:

"Wisconsin now has more cut-over and idle lands than ever before, some 13,000,000 acres more than all the improved farmland in the state. There are in the Lake States alone from 25,000,000 to 30,000,000 acres of cut-over land and the area is continually augmenting. . . . In Minnesota, at the rate of clearing and settlement during the past forty years, it would take nearly a century to absorb into farms even the best part of the land now idle."

It is impossible to express adequately the value of these bottom lands from the standpoint of wild-life conservation. They form one of the most valuable spawning grounds for black bass in the entire country, and in addition are favorite resting and breeding resorts for wild fowl during migration. Their drainage and attempted conversion into farm lands would be one of the most unfortunate and unforgivable blows at wild life conservation in recent years.

The proposal to drain this area, we are advised, was initiated chiefly by citizens of Lansing, Iowa, for the supposed benefit that would accrue to them as owners of lands on these bottoms, and with the further idea that the reclamation of the lands would result in the building of a bridge across the Mississippi River at the town of Lansing. Permission was obtained from the War Department and from the Drainage Commissioners of the State of Wisconsin for the proposed drainage; but sportsmen and others, recognizing that the project will destroy one of the best wild-life resorts in the Middle West, promptly opposed the drainage and carried their case into court. It is now in the Supreme Court of the State of Wisconsin and has been set for hearing.

Extracts from Dr. Oberholser's report, which is enlightening, are given herewith:

"These bottoms consist of wooded or partially open land, much of it marshy, with many lakes, ponds, sloughs,

and inlets, formed by the Mississippi River, which during high water completely floods the entire area for some two or three miles in width.

"It is proposed to dredge and dike the main channel of the river, so that all the rest of the bottom land from bluff to bluff will be thereby made dry land, and thus suitable for farming purposes. . . .

"So far as the actual draining of the area is concerned, it is probably feasible, but the estimated cost would be something like \$80 per acre for the land redeemed. At the present time, this whole area is an excellent resort for waterfowl of all kinds, particularly during the spring and fall; and during the breeding season it is tenanted by numerous wood ducks (*Aix sponsa*), a few mallards (*Anas platyrhynchos*), and various other water birds of less economic importance. Numbers of muskrats likewise live in these bottoms, and the revenue derived from the taking of these animals for their fur amounts to a considerable sum each year.

"This area is, furthermore, one of the best sections of the Mississippi River for fishermen, and the various lakes and sloughs form a wonderful refuge, not only for the fish themselves at all times of the year, but also for spawning purposes. From the land-locked ponds and lakes in the area between Lynxville, Wisconsin, and Lansing, Iowa, there were reclaimed by the United States Bureau of Fisheries during the year 1921 the enormous number of 23,607,000 fishes. Not only are the commercial fisheries in this section of the river very important, but numerous private fishermen find here opportunities for the exercise of their favorite sport. This great area of bottom land, including the ponds, inlets, and sloughs, forms a remarkable holding ground for the flood waters of the Mississippi River, and its value in this particular is great.

"Should the drainage project be put through as planned, all of the above assets would be practically eliminated; the area would be worthless as a resort for waterfowl, both in spring, summer, and autumn; the muskrats would practically disappear; nearly all the fishing would be destroyed, and the great spawning and living grounds for fish ruined. In addition to this, the flood waters of the river, which are now held back to some extent by this area, might without this check cause much more damage to places along the river banks bounding the area. It would also have the effect of increasing flood stages for a given discharge for some distance below the proposed drainage districts.

"The great expense of the project, due to the difficulty of drainage, would make the land thus obtained cost more than it would be really worth, for the failure of a similar project near Muscatine, Iowa, shows that the land would not be of much value for agricultural purposes, because the water-level in the river in flood stages would be likely to make the land too wet.

"In view, therefore, of the great damage to the wild fowl and other game; to the fur industry, as represented by the muskrat population of this region; to the fishing industry, as well as to private fishermen; to the river valley, owing to the increased potential flood damage; and in view of the impracticability of the project as an agricultural asset, as well as its almost prohibitive cost, it is strongly recommended that the proposal for the drainage of these bottoms be abandoned."

The Ranger Rides an Open Trestle

And Right Then and There His Heart Stopped Beating

By E. A. Woods

YES, sir, as I was saying, if you get out and shake your feet, you can stir up a movie thrill most any time. But, doggone it, if you fellows don't leave me alone I never will get strung out to tell the wildest experience I ever had.

It was in the spring of 1908. I am right here to tell you, routing bears out of their winter dens, outrunning snow-slides, guiding posses, and all the rest of my experience put together wouldn't have a look in with the stunt that I pulled off that spring.

Stir up that fire a bit, while I roll this pill. As near as I can remember, it was some time in May I got a letter from Supervisor Page S. Bunker, located at Kalispell, reading something like this:

"On receipt of this letter you will immediately proceed to Piegan Ranger Station and report to Deputy Supervisor Jack Clack."

I didn't have any family ties those days, and it didn't take me long to throw my worldly belongings on the hurricane deck of the cayuses and hit the trail. Putting a couple of little flasks in the saddle pockets in case of meeting up with rattlesnakes, I bid the boys "Adios."

After half a day on the road the dust turned to mud, and I was three days making the trip from Elk Creek Ranger Station, west of Augusta, to my old bed grounds at Dupuyer Creek Ranger Station. When I dismounted I was sure tickled when Ranger Dick Dean, with whom I first went to work, gave me the glad hand.

To make a long story short, I stayed in that cabin for fifteen days, waiting for it to quit raining. High water? Little creeks you could jump across any time of the year were roaring, raging torrents. Big spruce trees, tops and roots, would go sailing on down as though they were chips.

Dick owned a ranch adjacent to Dupuyer and was anxious to know how things were going down on the flats; so we saddled up and rode on down. The high water had sure got in some good licks. Remnants of cattle and sheep sheds hung up in cottonwood trees were seen all along the way; irrigating ditches were all torn to pieces. In fact, it had just raised hell. Many of the buildings in the little town of Dupuyer were full of water. After a day or two at the ranch straightening things up and hacking up some wood for the women folks, we returned to the station, Dick figuring to use me to help build fences while the ground was soft. I was willing, as I hadn't thought of going to Piegan Station as long as those rivers were booming. I notified the Supervisor of the cause of my delay, and we started fencing.

We had just got nicely started when along comes a fellow by the name of Henry—I forget his other name—and he was sure excited. He also had a letter from Supervisor Bunker, ordering him to report not later than June 30 at Bad Rock Canyon, to work on a trail going up the North Fork of the Flathead. Well, boys, that yahoo talked me into the notion of starting next morning. We had an understanding, however, that he was to take the lead in fording the rivers. Did I get it in the neck? I'll say I did. Haven't been able to figure it out to this day. Somehow or other, that son of a Henry managed to get into more scrapes with



ALL AT ONCE, ABOUT HALFWAY OVER, I HEARD A TRAIN COMING. I LOOKED BACK, AND HERE SHE WAS, ABOUT HALF A MILE BEHIND. I DIDN'T DARE JUMP OFF, BUT I JUST LET THAT PONY HAVE HIS HEAD, AND AWAY WE WENT



AT DUPUYER CREEK RANGER STATION RANGER DICK DEAN
GAVE ME THE GLAD HAND

his old crow baits every time we came within half a mile of a stream than you can shake a stick at, and yours truly would have to take the lead.

We crossed Birch Creek, then Badger—I wonder if you fellows know that the headwaters of Badger were Hon. Gifford Pinchot's hunting grounds years ago—then came the Little Badger, and then the Marias. I make no bones about it, I was shaky about the knees, for I am here to tell you that old river has sure claimed her share; but we busted her wide open and made it fine and dandy. Then we started in a westerly direction to cross the North Fork of Two Medicine River about one mile below where Glacier Park Hotel now stands. I don't know whether it was thinking of the chances we took crossing those other streams, but when we came to the Two Medicine the bottom simply fell out of my stomach. It was running like the mill tails of hell, carrying a good two-foot center crest, logs and debris drifting by lickety scoot, boulders grinding and rolling.

"How does she look to you, Henry?" says I.

"Let's camp for the night," says he. "She may have a better complexion in the morning."

So we set a gauge stake to determine developments and rolled in. Next morning Henry drops an extra spoonful of coffee in the coffee-pot, figuring it would give us an Indian brave, I guess. But after we looked at that stake and saw that the water had raised another foot, it would have taken more and better Java than I have ever tasted to induce me to ford that stream.

"What are you going to do?" says Henry.

"Camp right here," says I.

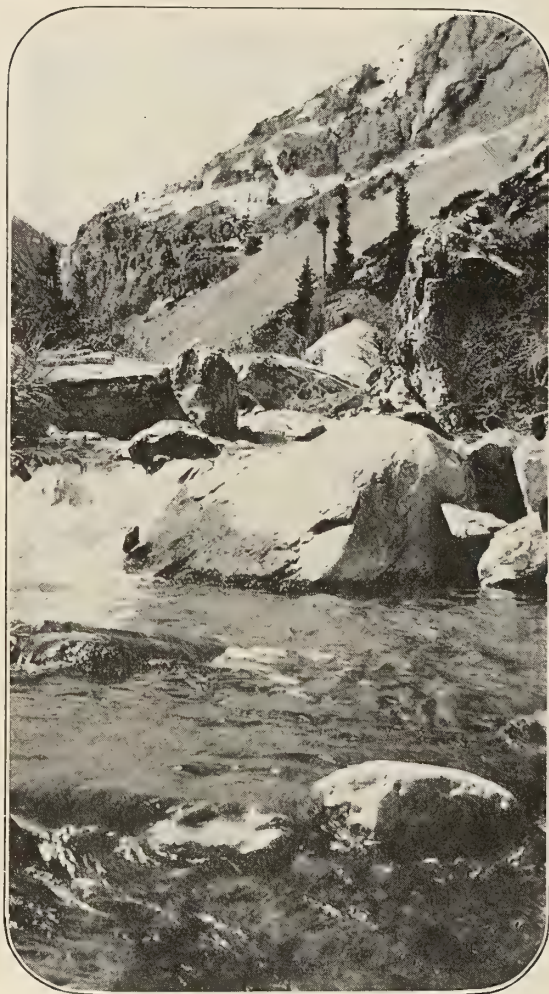


PACKING A ROUGH ONE PREPARATORY TO HITTING THE TRAIL

"But I have instructions in my pocket to report for duty June 30th," says he.

After further debate, we decided to see if we would have any luck getting the horses over the Great Northern Railway bridge. Henry's hopes raised 100 per cent.

When we finally got around to the bridge we found that it was open construction. The cross-ties were just far enough apart so a horse couldn't walk on them without getting his feet between them. Right there and then Henry passed some



HIGH WATER? LITTLE CREEKS YOU
COULD ORDINARILY JUMP ACROSS AT
THAT TIME OF YEAR WERE RAGING
TORRENTS

remarks about the Great Northern, Uncle Sam, the Forest Service, State of Montana, and the world in general that I ain't going to repeat. As I remember it, he got it off to the tune "There'll be a hot time in the old town tonight."

A little stunt I saw some Cree breeds pull off crossing a swamp at the head of Peace River in Canada gave me a hunch.

"I have it now," says I.

"Have what?" says Henry, madlike, thinking I was going to hand him something.

"The big idea," says I. "We'll doll these ponies up in California overshoes."

[Continued on page 743]

Should We Use Christmas Trees?

By F. W. BESLEY

State Forester of Maryland

TO WHAT extent, if any, does the cutting of Christmas trees and Christmas greens interfere with forest conservation? A satisfactory answer to this question should go a long way toward allaying our fears or exciting a deeper concern, as the Christmas season approaches.

We may assume that most people are interested in the conservation of forests and willing to forego a certain amount of personal enjoyment for the public good, when they are convinced that such indulgence is harmful to the public. But is the general use of Christmas trees to be condemned because it sacrifices trees of potential

variably come from the more open spaces, and their removal leaves many gaps. This is bad forestry, for full timber production can only be obtained from land that is fully stocked.

It is true that such desirable trees as spruces and hemlocks, both tolerant of shade, can be grown as an understory in the forest, or even in crowded stands they maintain their symmetrical shape to a remarkable degree. But why should we attempt to combine Christmas-tree production with timber-growing and give the impression that we cannot have Christmas trees without damaging the forest. Rather adopt the slogan "Trees for every use"



FINE, HEALTHY YOUNG TREES OF THE TYPE USED FOR CHRISTMAS TREES, TYPICAL OF THE INTERIOR OF OPEN WOODLANDS AROUND WASHINGTON. ELIMINATE THE VANDAL, WHO WOULD STRIP SUCH A SPOT, AND THE REACTION AGAINST THE USE OF CHRISTMAS TREES AND GREENS WOULD LARGELY SUBSIDE

timber value? I do not think so. The use of Christmas trees is an established custom, dating back many centuries, and cannot be lightly cast aside on the plea of the sentimentalist or even the economist. It is a deep-rooted institution, that must be regarded with the utmost consideration. Leaving out of the consideration, however, the fine sentiment that is built up around the Christmas tree and the shock that would come if this joy of the Christmas time were denied, how does cutting of the five million or more Christmas trees every year really affect the progress of forestry?

Where do the Christmas trees come from and what do they represent in tree-growing?

Good Christmas trees are rarely to be found in dense forests, under crowded conditions. Here the trees are narrow-crowned, the lower branches are likely to be distorted and devoid of leaves, and the trees lack a bright green, healthy foliage. Good Christmas trees almost in-

and set about to produce Christmas trees as such, to satisfy a real need.

It is probable that the commercial tree-gatherers obtain most of their stock from abandoned fields that have been allowed to grow up in evergreens. In some cases the ultimate purpose is to again clear the land for cultivation. In most cases, however, the trees constitute a crop that costs nothing to establish and are regarded as clear profit from waste land. Not a few come from the interior of open woodlands, the edges of woods or roadsides, and some are nursery grown, while a few scattered plantations have been established specifically to meet the demand for Christmas trees. Most of the trees are purchased from the owners of the land at small cost, however, or are obtained free, but unfortunately a considerable number are taken without leave or license. If the Christmas-tree vandal could be eliminated and the owner of the land (the grower of the trees) receive proper

compensation, the present reaction against the use of Christmas trees and Christmas greens would largely subside.

Since 800 large Christmas trees or 2,000 small ones can be grown on an acre of land in from eight to twelve years, it is apparent that the five million Christmas trees used annually can be produced on a relatively small acreage; and if the business is conducted in a legitimate way, it should become an established branch of tree-growing, instead of an irregular business, often conducted under questionable methods.

If a farmer, for example, finds that he can cultivate to good advantage a ten-acre field that he abandoned some ten or fifteen years ago, and which is covered with well-developed evergreen trees from five to fifteen feet in height, he is in a position to clear off the land for cultivation, get 4,000 or 5,000 Christmas trees and sell

It is in the gathering of so-called Christmas greens that the rights of private property are most often disregarded. In the vicinity of cities and towns it is the common custom for householders to go forth in the fam-



RED CEDARS ALONG A RECENTLY IMPROVED ROAD TWELVE MILES FROM WASHINGTON. WILL THEY SURVIVE THIS CHRISTMAS WITHOUT MUTILATION? IT IS NOT LIKELY



THIS WILL SOON BE A COMMON SIGHT ON MANY COUNTRY ROADS—THE FAMILY CAR LOADED WITH THE FESTIVE TREE AND GREENS—A CUSTOM, IF PRACTICED IN MODERATION, NOT TO BE CONDEMNED

them at a fair profit, provided he does not have to compete in the market with trees that were stolen from other property and the cost of growing did not enter into the sale price.

Many species are used. Fir, spruce, hemlock, pine, and cedar are all used for Christmas trees. Preference is in about the order given. They can all be grown commercially in planted stands and at a profit, where there is a good demand, such as is furnished by some near-by large city, and it is likely that in the next few years the growing of Christmas trees will increase to a marked extent and become an important business. They are grown to some extent now, but with such strong competition with wild stock that there is small profit.

ily automobile about Christmas time to gather Christmas greens—not to be condemned when practiced in moderation, but quite often unhappily the roadsides are stripped and the adjoining woods entered for holly, evergreen branches, laurel, or any foliage or berries that make Christmas decorations. This is not confined to the householder, however, for many gatherers of such material invade the woodlands, collecting it for dealers or offering it for sale on the streets. Not only are the roadsides despoiled of their attractive greenery, which should be enjoyed by thousands of travelers, but in invading private property and stealing the greens much damage is done to the property itself, and, in addition, the owner is deprived of a legitimate revenue which properly belongs to him. Christmas greens should be regarded as a by-product of the forest, the revenue therefrom constituting an intermediate yield that should help to make the growing of timber more profitable to the owner, and thus encourage the timber-growing business for the benefit of the public.

What is needed are stringent laws and their zealous enforcement to prevent vandalism and to assure to the owners of property that their rights will be protected, and that the gathering and selling of Christmas greens will become a legitimate business, bringing real revenue to the land-owner.

There are vast areas of woodland in which the abundance of holly, laurel, ground pine, and other greens suitable for Christmas decorations should constitute a profitable annual crop. The writer knows of a case where a woodland owner has, for several years past, gathered an annual crop of holly from his land for the Christmas trade. He carefully trims the trees without mutilating them, and the crop nets him an annual return of about \$3.00 an acre.

At least one state has recognized this annual menace and enacted

legislation for abating it. The Maryland law, enacted in 1914, makes it a misdemeanor, punishable by fine, to cut or trim any tree growing along a public highway, without a special permit from the State Department of

Forestry. A law enacted in 1918 goes much further, in that it is made a misdemeanor, punishable by fine or imprisonment, to remove, cut, break, injure, or destroy any

tree, shrub, vine, flower, moss, or turf from the premises of another without the written consent of the owner, or except under the personal direction of such owner. There have been many convictions under this law, and while it has not been possible to fully enforce it, it has had a most beneficial effect in reducing Christmas vandalism.

The growing sentiment for

preserving the natural beauty of our roadsides is very encouraging, and each recurring Christmas season wins new active converts from those who have witnessed acts of vandalism, and gives increased impetus to the movement.



AN OLD FIELD IN MARYLAND WHICH HAS DONE VALIANT SERVICE FOR YEARS IN SUPPLYING THE FESTIVE TREE, BECAUSE IT HAS BEEN HANDLED PROPERLY AND THE ANNUAL CROP CAREFULLY HARVESTED

The Ranger Rides an Open Trestle

[Continued from page 740]

"Are you nuts, or bugs, or both?" says Henry.

"Watch my smoke, and if you don't say I'm the only original genius running loose I miss my guess."

It's getting late, boys, and I can't go into details as to the different didoes those cayuses pulled off, but I am telling you I never laughed so hard in all my life.

We took our bedding, gunny sacks, and saddle blankets and tied them around the feet of those ponies. They looked like elephant's feet and big enough so they couldn't sink between the ties. I tell the world it was some circus.

As this was taking place, I saw an incident I never saw before or since. In my time I have bumped up against several tribes of Indians—Dog Ribs, Pieguns, Crees, Blooks, etc.—but never have I seen a full-blood buck Indian burst out laughing like a white man. Near by, in the brush, was an Indian camp. An old buck came up to see what we were doing. When he saw those horses flopping around in that gumbo clay I thought he would kill himself laughing. He just rolled on the ground and acted like a coyote that has taken a bait loaded with mercury. It was sure rich.

The idea worked like a charm, except for one thing. Just before leaving Elk Creek I traded for a dandy, fine

saddle horse. That old boy was there with bells on. You could ride him into any place on earth, but you couldn't lead him. Seeing as how the trestle was about 700 feet long and over 250 feet high, it never entered my head to ride that horse across. All the other horses went across the trestle just like a whoop, but when I tried to lead Brownie, there was nothing doing. So I piled on and we took a circle around the flats to get used to the new footgear. By that time I was mad enough to ride him any place. So we headed straight for the trestle. The first fifty feet wasn't bad. After that I was riding light. That crazy knothead was fighting the bit to get with the other horses. I was beginning to settle down in the saddle, when about halfway over I saw Henry making wild signs. All at once I heard a train coming. I looked back, and here she was, about a mile behind. I didn't dare jump off, but I just let that pony have its head, and away we went. I wasn't afraid the train would catch us, if all went well, but I was wondering what if Brownie's California overshoes came off and he got his hoof fast between the ties.

I visualized the scene of the boys packing me to the bone orchard after gathering up the pieces in a hand basket.

[Continued on page 757]



EDITORIAL



*"Instead of the Thorn, Shall Come Up the Fir Tree,
And instead of the Briar, Shall Come Up the Myrtle Tree."*

Time for Action

ONE of the most important questions which the new Congress will be called upon to consider is that of a federal forest policy. It is certain that one, and likely that several, forest bills will be introduced during the winter. These bills will undoubtedly have much in common, but, judging from the past, their sponsors may disagree on certain features of a complete forest program.

Herein lies the danger of a log jam which would serve to block any legislative progress, even in respect to those features upon which all are agreed. Our forest problem cannot be solved at one stroke. Let us get that out of our minds. It is too big and too ramifying a problem. Waiting to do it that way, while we endeavor to thrash out all controversial and economic features, some of which may take years to settle, is poor conservation. In fact, it is stepping backward, because, while we delay, forests are being burned and millions of acres of forest land are being devastated.

In a statement printed on page 708 of this issue of AMERICAN FORESTRY Colonel Henry S. Graves points out very emphatically the paramount urgency of immediate

progress, and he cites three steps which can and should be taken at once. They are of fundamental importance in solving our forest troubles and they are logically the first steps of real nation-wide progress. Furthermore, they are widely endorsed and are not of a controversial character.

Our forest situation has been investigated and reinvestigated, and every agency which has gathered and reported the facts has stressed the urgency of action and pointed to the need of more public forests and of greater federal aid in fire protection. The report of the Select Senate Committee on Reforestation has not yet been made, but any one who has followed the testimony given the committee must be convinced that its members have come to the same conclusion.

With respect to the proposals mentioned, AMERICAN FORESTRY believes that the time for further investigations has passed; the stage is cleared for action, and nothing short of real, definite progress will be acceptable to the American public. Now is the time to pass on that message to your representative in Congress.

National Parks Must Be Guarded

OUR national parks, it has been said, are always in danger. For a nation which counts itself the most enlightened in the world, the assertion is none too flattering. Those who have followed intimately the history of our national parks, however, know that it is only too true. They know also that the season of greatest danger to our national parks is during the months when Congress is in session. It is then that those who covet our parks, or their use, for personal profit seek, often through cleverly disguised lobbies, to break down the legislative protection which now surrounds the parks and holds them for the benefit and enjoyment of all.

The new Congress may be expected to bring to light renewed efforts to drive the wedge of commercialism into some of our federal parks. It is reported, for example, that the Walsh Bill, designed to dam Yellowstone Lake, will again be introduced, and that a bill to permit the flooding of a large area in Glacier National Park as part of an irrigation scheme may be brought from cover. Certain it is that danger from such sources lurks in unexpected places, and that friends of our national parks must not relax their watchfulness or their willingness to serve as minute men when the enemy, "commercialism," shows its colors.

Another source of danger, quite different in legislative character, is to be found in the provincial agitation to

create local national parks. Many people have an idea that the way to conserve natural resources or an area of some local interest is to create a national park, little appreciating the fundamentals of the movement. The National Parks Association has well pointed out this danger.

"Several bills to create local national parks below the standard quality," it says, "are expected to be introduced into the next Congress. These bills will offer to 'give' the nation areas which inclose neither scenery of national importance nor sufficient area for fitting administration and the accommodation of park visitors. One such 'national park' will open the door to scores of others, inviting wide competition for little local national parks.

"We must permit no such precedent. National park standards must not be lowered. Those from whose minds the local interest hides the national view must learn or yield. Neither must the name be prostituted to the advertisement of localities. Nor will the nation stand for the national park pork barrel that inevitably will follow the opening of the system to local competition."

We must guard our national parks on all sides, and most particularly we must guard them against commercialization and against an unthinking and sometimes a purely selfish desire to make them less than national in interest and service.

Needed Protection for Our Wild Life

AN OUTSTANDING conservation measure to come before Congress this winter is the proposed Public Shooting Ground-Game Refuge Bill. The urgent need of this legislation has been fully pointed out in the series of articles published in AMERICAN FORESTRY during the late summer and fall. From the standpoint of fish and wild-life conservation, the passage of the bill will stand as one of the greatest steps forward in recent years.

The Public Shooting Ground-Game Refuge Bill was passed by the last Senate by a vote of more than two to one, but was lost in the House of Representatives by a few votes. It was defeated primarily by the votes of Congressmen from the Southern States, undoubtedly because of a belief that the legislation proposed was an intrusion of state rights. The fallacy of that belief has since been pointed out by reference to a provision re-

stricting the Federal Government from acquiring land in any state for game-refuge or public shooting-ground purposes until its acquisition has been approved by the state legislature.

Will this measure pass? It will if conservationists will give it their undivided and earnest support. It is not enough that they be for the bill. They can hardly be otherwise. They must work for the bill and enlist their friends and their communities in the fight to conserve our wild life and to perpetuate equality and liberty for American sportsmen. The rapidity with which our good game areas are passing into the hands of the rich is not a healthy American transition, while the continued destruction of breeding and resting grounds of fish and wild fowl is too often outright murder.

The Game Refuge bill must pass.

Why Drain the Winneshiek Bottoms?

HOW hard pressed we must be for land in the United States! What a shortage of food must impend! Otherwise, why the proposal to spend huge sums to drain and dike the Winneshiek Bottoms on the upper Mississippi?

It seems only yesterday that they were spending millions to send floating dredges floundering through the marshes and peat lands of the north—even beyond the source of the Father of Waters. The cry was to make available more arable land. Drain the swamp! What matter if millions of acres of natural reservoir were converted into areas of quick run-off? Why think of the myriad wild fowl that for generations had nested in the region? Why consider the great stretches of pulpwood that must die and go to waste as a result of suddenly lowering the water-level? Let the settlers on the higher lands take their chances with the fierce fires that were sure to develop on the vast areas of peat land, drained powder dry. Attractive contracts were to be had; ditching machinery in quantity was to be sold.

It has been tragic—the history of much of this drainage. Many a settler has been burned out. Some have moved to safer districts; others to Canada. Where are the ducks and geese? Where are the moose and deer and caribou that roamed these great natural sanctuaries? Where is the water with which to fight the fires now burning out these great surface fuel beds?

Today they have moved the coughing dredges to the

Land of Ten Thousand Lakes. The lakes too, it seems, must be sacrificed to the greed for ready money. More land for agriculture! Ye gods! Throughout northern Minnesota and Wisconsin there are today millions of acres of raw land of high agricultural value going begging at five to ten dollars an acre. But what do the drainage contractors care for scenery, wild fowl, fur, or fish, or for the effect of water surface on surrounding farms, or for the importance of underground water-table to the real agricultural districts? It is as if no one ever knew that an acre of inland water is worth as much as an acre of good farm land.

Tomorrow the dredges are billed for the Winneshiek Bottoms. The ostensible object is more land. The immediate object is more contracts. The outstanding result will be another tragedy for our wild life. Is it not enough to have needlessly and at terrific cost wrecked the breeding grounds of a million game birds? Shall we permit the drainage of more lakes, the feeding grounds of our remaining wild fowl? Must we needs sacrifice the Winneshiek Bottoms also, the greatest game-fish hatchery on the continent, the most essential resting and feeding grounds for the wild fowl of the north on their migrations to and from their winter home on the Gulf? With supreme indifference to an important resource and with contempt for the charm and value of wild things, shall we continue to sit by and allow this thing to be done?

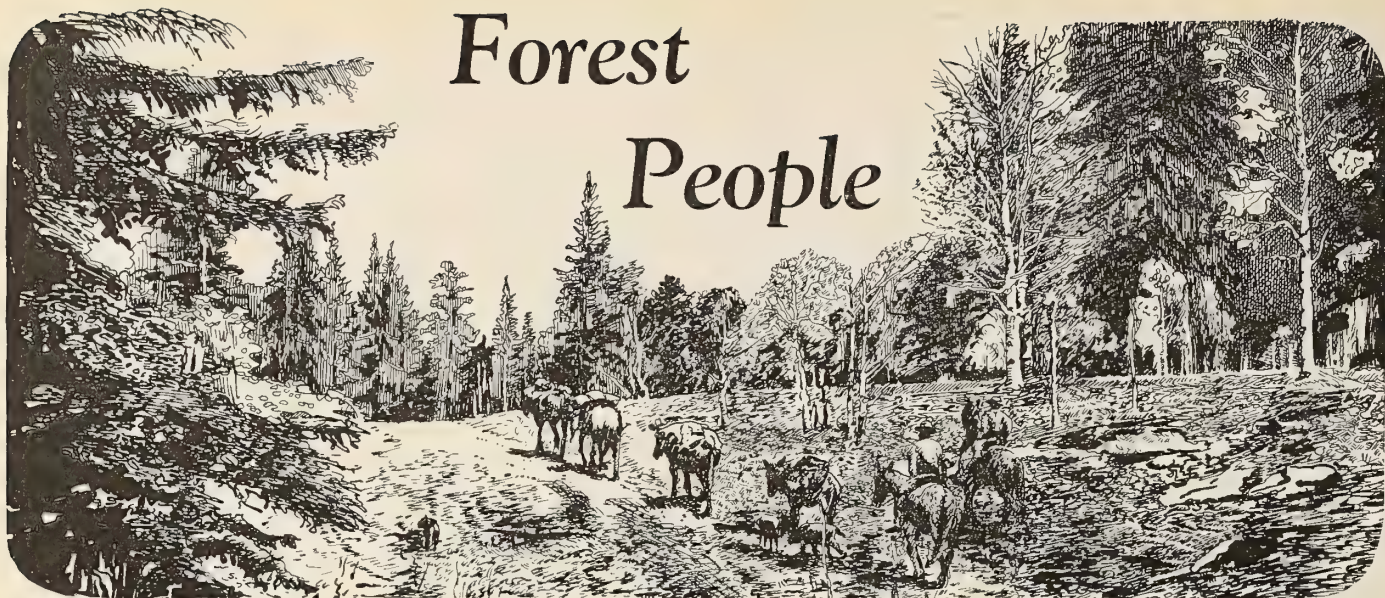
Real Americans will not.



AMERICAN FORESTRY is indebted to the courtesy of the Boston and Maine Railroad for the use of the pictures on pages 736-737—"Christmas in the Winter Woods."



Forest People



THIS column is devoted to stories about real men and women who are doing original, interesting, and worth-while things in the forests or in any field relating to the forests. Do you know of any one in your town or state who is a true friend and lover of the forests, and who is showing it by setting an example in the growing and care of trees, the protection of birds, wild animals and wild flowers, the advancement of outdoor recreation, forest education, wood utilization, lumbering, or any other realm of America's woodlands? If you do, tell our readers about them.

Skippers of the Christmas Tree Ship

BY MEYER LEVIN

WHEN mud-mixed snow slushes the rotting plank walks along the river in Chicago, and wheezy captains, boatmen, eccentrics, and handlers of freight huddle together in Mike's dank-walled lunch-room down by the docks, stories still go around of the old *Rouse Simmons* and her crew.

And when turkey-fed and cranberry-stuffed children tire of the dance and prattle around the tinsel-clad Christmas tree, but still protest that bedtime is not yet, there is many a man with a bald spot widening on his top who delights his family with the tale of how the evergreen was chopped by Indians and dragged through marshes and piled on trains and brought to them by the Schuenemanns. Then he sobers the little children with the story of the old *Rouse Simmons* and how she went down in a storm-tossed lake eleven years ago, while bringing balsam and firs to Chicago. He tells them of the firm Mrs. Schuenemann who would not let the waves take the memory of her husband from the world; of the brave wife of Captain Schuenemann, who brought new trees to the city when her hus-

band went down with his cargo, and who has brought trees to Chicago every year since that fateful year of the stormy lake. The story is told of the "Christmas Tree Girl," Elsie Schuenemann, who sold the trees in a North Clark Street store in Chicago.

Elsie was twenty years old when the *Rouse Simmons* went down; she and her mother worked hard and carried on the Yuletide business. When help was offered them, they said, "Let that be given to the families of the poor sailors who went down with the boat. They need it worse than we do. We have pride, too."

The "Christmas Tree Girl" is married and a mother now; but Chicago still sees her smiling among the evergreens piled high in the store every year in the season of the snows.

Then there are the twins. Hazel and Pearl were mousy little girls in 1912. They were shy and stayed in back of the store; but now it is for the "Christmas Tree Twins" that Chicago looks

every year, the two deep-eyed sisters that have taken Elsie's place as the marketers of the trees.

Every year for twenty-seven years Captain Schuenemann



THE CHRISTMAS SHIP "ARDENAL" AT THE CLARK STREET DOCK IN CHICAGO, LADEN WITH ITS CARGO FROM THE GREEN WOODS OF MICHIGAN

went up into the North woods of Michigan, where his family owned large tracts of land, to bring back trees for Chicago. He would get a crew of high-cheeked Indians and their squaws, and together they would march on the forests. For perhaps eight weeks the cutting and the hauling would go on—eight weeks among the big balsams, camping out, feeling the whip of the cold air, watching the black-haired squaws make wreaths, and working every day with strong chopping arms. Then the *Rouse Simmons* would be piled high with evergreens, and Captain Schuenemann would start his annual trip across the lake. Along about a week before Christmas the *Rouse Simmons* would lie along the Clark Street docks, and Mrs. Schuenemann, and later with Elsie to help her, would stay all day and sell the trees to eager citizens who came regularly every year to the historic spot.

Every year the Captain and his gang of Indians went farther into the woods for their trees for Santa Claus. But the beginning of

December saw them perched snugly by the docks, unloading. Then came the stormy sea of 1912, when the *Rouse Simmons* didn't come in. Over the front pages of the newspapers were stories of the search for trace of her, stories of drifting trees that had been picked up on the coast of Wisconsin, and at last the story of the bottle that had drifted to land. In it was the good-bye note of Captain Schuenemann. The *Rouse Simmons* had gone down and all on board had perished.

The next year Mrs. Schuenemann left her Chicago home and her daughters at 1638 North Clark Street. Elsie wanted to go along, but the mother would not allow it.

In ten weeks Mrs. Schuenemann was back. A train-

load of trees from Michigan forests followed her into Chicago. "I just couldn't bring them by boat," she said. "I kept thinking of what happened last year. The men wanted to sail down, but I refused. I thought of their wives and of the wives of the men who went down on the *Rouse*. But when the trees get here we'll have a schooner

waiting. We'll load the trees on it and tie it up at the old dock, and our customers will come to us as they have in other years. They know where to find us. The *Rouse* is gone, and her captain is gone, and her crew is gone, but Christmas will find the survivors still on deck, and Chicago will have her trees as long as the Schuenemanns last.

"It was great up there in the forests. In the long, starry night, with the smell of the pines creeping into me, I always thought of how my husband would be there at that moment, if he were alive; and somehow I felt as if he were there with me. Every year I shall go into the North woods, and when I am dead there will be others to carry on the work for me."



Photograph by W. Alden Brown

PARTNERS OF SANTA CLAUS ARE THE SCHUENEMANN SISTERS, WHO YEARLY BRING TO CHICAGO BEAUTIFUL CHRISTMAS TREES TO DELIGHT THE HEARTS OF THE KIDDIES AT YULETIDE

Mrs. Schuenemann has kept her promise. Ten, eleven years have passed. One daughter has married, a grandchild has come, and the twins have grown up; but every year Mrs. Schuenemann has gone into the forests—further into the forests of northern Michigan—where her husband would have been, feeling that he was with her.

A crew of white men and Indians cut the trees, drag them with horses through water and snow, and load them on trains. Indian women and children, sitting in camp, make wreaths and clusters for Chicago homes.

Then comes the ride back home at Christmas time, and the store near the docks on Clark Street, with the twins bustling about selling trees to a long line of customers.



Mistletoe—The Insidious Enemy of Trees

By WALTER J. PERRY

THERE are at least five species of mistletoe more or less common in our southwestern National Forests, although but two of them damage coniferous trees of value for sawn lumber.

The tree of greatest commercial importance in New Mexico and Arizona is the Western yellow pine (*Pinus ponderosa*), which is quite commonly infested by a species of mistletoe with the Bolshevistic-sounding name of *Razoumofskia robusta*. This parasite is not the pretty kind used for house decorations along about Christmas time, which has been called "the romantic parasite." In fact, it merely forms a rather unsightly yellowish-green and leafless bunch of stems. Even the scanty berries are a rusty purple instead of the waxen white of the broad-leaved variety.

Infestations commonly do most damage along the tops of ridges and on dry south and west slopes, where the poverty of soil and lack of soil moisture render it difficult for the pines to make satisfactory growth, even without enemies. When heavily infested, a great part of the stand may never reach sawlog size. A tree with a few bunches of pistillate or seed-bearing mistletoe may infect its neighbors and it is practically certain that any surrounding reproduction will not escape infestation.

The seed is disseminated by the seed vesicle bursting when ripe and forcibly expelling the seed a distance of ten to fifteen feet. The seeds are covered with a mucilaginous substance, which causes them to adhere firmly to the first object they strike, and such of them as chance to land on the bark of very young pines, or that of pine twigs less than three years old, adhere and proceed to penetrate the tender bark and cambium, where they start to grow. They are unable to penetrate the older,

rough bark. Also, it appears reasonable to suppose that seeds are occasionally carried considerable distances by birds and squirrels. This seems to be proved by the fact that isolated young trees are sometimes found infected.

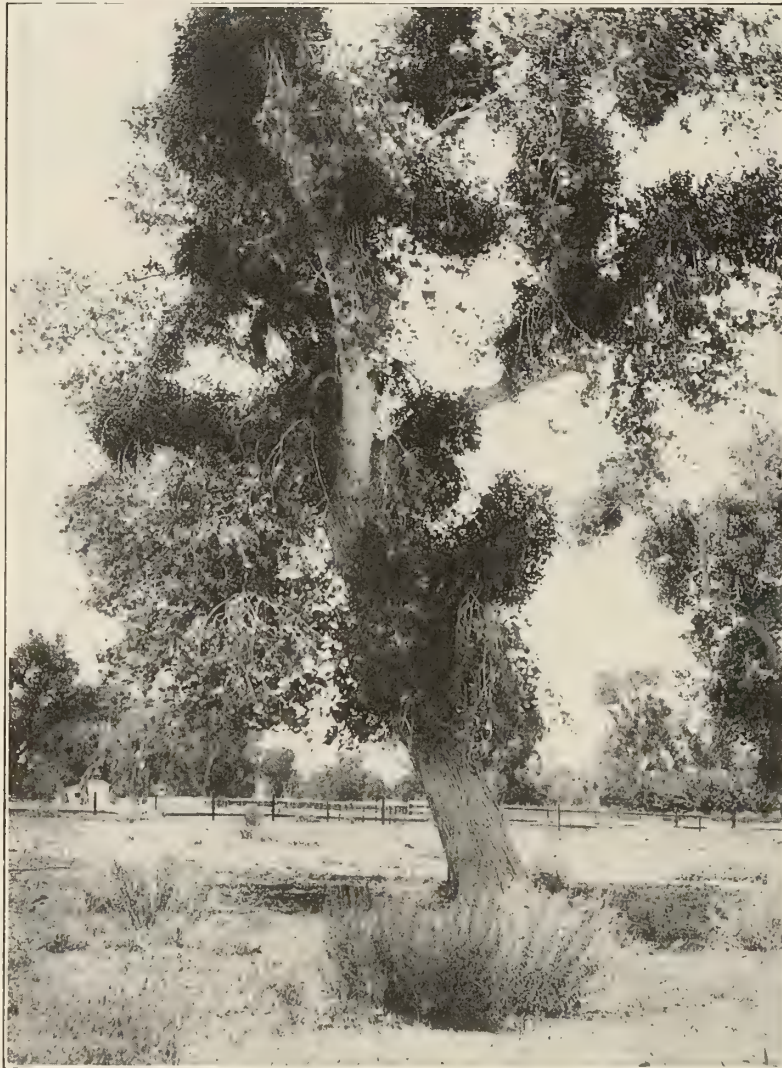
Experiments which have been carried out indicate that young trees may be freed of the pest by pruning, provided the bole of the tree is not infested, also that the tree is gone over a second time in two or three years to remove any plants which were too small to be noticed in the first operation, before they in turn bear seed.

Mistletoe injury to the pine is both direct and indirect.

(1) When a young tree is attacked in the branches an undue amount of the tree's food supply is diverted to the diseased branches, which may grow to enormous size, at the expense of the starved bole, though in the course of time the branch usually dies and drops off. On particularly favorable sites, with deep soil and plenty of moisture, the tree may outgrow its enemy, eventually cast the diseased branches, and make a fair upward growth.

(2) Even though the tree should cast all its

diseased branches, there remain large patches of dead or badly diseased bark allowing access to the heart wood by spores of heart-rotting fungi. It is commonly observed that mistletoe-infested stands are also badly affected by the red heart-rot, amounting in some localities to as much as 20 per cent of the merchantable portion of the stand. Although a tree may cast its diseased branches, it probably never entirely rids itself of the parasite, and it is common to find small stems of mistletoe peeping out of the interstices of the thick bark on old boles, where it has persisted, perhaps, for a century, and on examination the cambium is found to be of a peculiar yellowish-green color and



THE BLIGHTED COTTONWOOD—A HEAVILY INFESTED TREE IN THE CLEVELAND NATIONAL FOREST



THE BEGINNING OF THE END OF A RED FIR ON THE WALLOWA NATIONAL FOREST. THE TOP IS THIN AND RAGGED

granulated appearance. Such trees never resume entirely normal growth.

The popular idea seems to be that mistletoe damage consists solely of starving the tree by consuming its food supply, or at least in diverting it to the infested branches. It seems certain that while this is true to some extent, it is not the whole story. The small amount actually used by the parasite plus that diverted would not account for the

tree is attacked by beetles it may, and very frequently does, exude resin so freely that the beetles are driven out of their galleries before they succeed in entirely girdling it, and the tree recovers, but in the case of a mistletoed tree, which is barely existing at best, this infrequently occurs. Second in importance, but second only because its host tree is less common, is the Douglas fir mistletoe (*Razoumofskia douglasi*).



AN EIGHT-INCH BLACK OAK STRUGGLING IN THE CLUTCHES OF MISTLETOE. TWO YEARS WILL SEE THE END OF THE TREE

greatly lessened growth of the upper part of the tree. Undoubtedly the greatest damage consists in a part of the cambium being destroyed entirely, as is usually the case, and part or all of the remainder being so affected that its function is seriously interfered with.

Not a great deal of timber is killed outright by mistletoe, but rather is its vitality so lowered that it falls an easy victim to some one of its many enemies, especially some species of the bark beetle *Dendroctonus*. When a thrifty

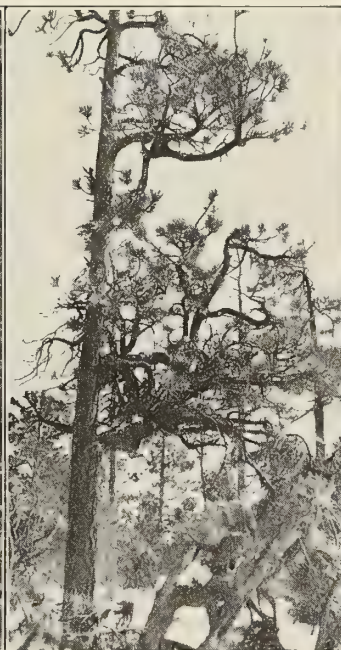
This is an insignificant plant of such small size that it would never be noticed were it not for the very conspicuous effect on the tree. It attacks the branches, but in this case the deformity takes the shape of a great bunch of enormously elongated twigs pendant from a gnarled branch, and commonly known as "witch brooms." The brooms are apt to be broken off by accumulated snow, and in any case they usually die and drop off in the course of time; but the vitality of the tree is seriously affected.



A GREAT DEAD SCAR FROM MISTLETOE INJURY



AN INFESTED BRANCH OF WESTERN YELLOW PINE



A BADLY INFESTED WESTERN YELLOW PINE



THE FINAL RESULT OF HEAVY INFESTATION

The Moose Butchers of Kenai

[Continued from page 720]

time of year, provided their need of food justifies it. The natives are too lazy to cure salmon for home consumption and for dog food, although our streams abound with salmon. It is so much easier to get moose meat. Therefore the natives kill, paying little, if any, attention to whether it is closed or open season.

The killing of female moose is going on at a terrific and alarming rate in our Kenai country. People will tell you that the moose are being driven out and away from the railroad. They are, in fact, being killed off and thus restricted more and more to the back country—a strip one hundred miles long and from twenty to twenty-five miles wide, bounded on one side by Cooks Inlet and on the other by the mountains.

Eight years ago, when the Government railroad was being built from Seward to Anchorage, moose were plentiful in the upper Kenai Lake country. The route of the railroad was through the heart of the moose pastures. Thousands of aliens were turned loose in this paradise of big game with high-powered rifles. They shot and killed regardless of game laws and regardless of the age, sex, or condition of the animals. Today one has to go twenty-five miles back from the railroad to see moose.

In the spring, when the snow leaves, the bulls drift up into the foothills, but the cows stay in the lowlands, along the shores of Cooks Inlet and the lakes and rivers, where they have their calves along in April. The cows are thus much easier to hunt, and they fall an easy prey to the native and market hunters, who take meat in summer. The bulls come down to the low country in the winter months, and of course are victims during that season; but the heavier inroads upon the cows have reduced their numbers to a ratio of about one cow to four bulls. If this butchering of the cows continues, it is a matter of only three to five years, I estimate, until our large moose herds along Kenai Peninsula will be no more. It has been estimated by a man in close touch with the wild life in the Kenai country that the moose here have decreased at least 80 per cent in the last ten years.

So much for lack of law enforcement in Kenai country.

The other enemy of the Kenai moose is, strange as it may sound, the rabbit. These animals multiply in our country in great numbers by cycles of usually seven years, when an epidemic of disease all but exterminates them. They are just now at the peak of their productivity, and because they feed on the same food as the moose—willows, beech twigs and leaves, alder bush, aquatic plants, etc.—they are bringing famine to the moose.

In winter the moose feed in the old burns and open places, digging into the snow for food, if necessary. Last winter the rabbits had so reduced their winter feed that I found many calves dead of starvation. From my own observation and reports made to me by others, I estimate that at least 50 per cent of last year's moose calves perished in the snow from starvation.

This winter the situation will be even more critical, for the exterminating epidemic of the rabbits has not yet

begun. Another enormous death toll, therefore, faces the Alaskan moose, especially the young ones. One thing only can save them and that is man.

This may sound like a gigantic or impractical task. In fact, it is a very simple and inexpensive one. Eight or ten men, properly placed throughout the winter range of the Kenai moose, could supply most of the herds with food by cutting down birch trees which have no commercial value. Under extreme hunger, moose soon abandon their fear of man and congregate in large numbers about sources of food supply. A sum of three thousand or thirty-five hundred dollars would employ the men needed, since feeding will be necessary only during February and March and possibly some of April. It would not have to be repeated until seven years hence, and then only if the rabbits become as numerous as at present. What an insignificant expenditure and an insignificant effort to save thousands of America's finest of wild animals from the silent and unseen agonies of winter starvation!

Why, the reader may ask, does not the territorial government or the Government at Washington come to the rescue with the few dollars needed to save these noble animals? We of Alaska, who are asking a fair deal for moose and other wild life, have pleaded for help from that source; but always the answer comes back, "No money."

Congress appropriated just \$20,000 for game administration and protection in all of Alaska during 1923—a sum insignificant even for warden service. There is, therefore, no hope from that source for the coming winter. The money must be raised quickly, for winter will now soon be upon us. Unless it can be raised by individuals and organizations interested in wild-life conservation, winter starvation will inevitably reap a heavy harvest from the moose pastures of Kenai.

But this winter's feeding is only incidental to preserving these animals. What the situation demands, and what all real sportsmen of the United States should demand, is a fearless and efficient enforcement of the game laws by the territorial government and an appropriation by the Congress at Washington sufficient to make that enforcement possible. We sportsmen and lovers of wild life want game laws for game protection and not for political jugglery.

Petrified Forests and Alaskan Coal

Paul Bunyan never smoked cigarettes, but he was very fond of his pipe. One day he sat on the top of the San Francisco Peaks looking for fires, smoking his pipe the while. The wind blew out several of his matches, which he carefully broke in many pieces and tossed down onto the plains, where there was nothing to burn. These old matches of Paul's are now being exhibited to unsuspecting tourists as the Petrified Forest.

Later on that day Paul spied a smoke in the northwest. He immediately set out to extinguish the blaze. Stepping down off the peaks, he tapped his pipe on Mt. McKinley, carefully covering the charred tobacco with earth. A chap named Guggenheim recently discovered these remains and claimed them as coal fields.

A Living Tree that Tells the Christmas Story

BY ALMA MARGARET HIGGINS

CHRISTMAS approaches. In every Christian land the lighted evergreen tree has become the token of Yuletide cheer, the symbol of that love and peace which the Christ Child brought to the world; for in winter, when all is brown and dead, when Nature has put all other trees to sleep, the evergreens are wide awake and manifest the abiding life within the plant world. Instead of cutting the tree, and so confining the length of its life and service to no matter how brilliant a week or two, why not use a *living* tree, brought carefully in for the holiday festivities and afterward replaced on the lawn or in the yard, where it will grow and develop in beauty—a living reminder of the happiness it brought in the past? Trees may well have been held in reverence by the nations of antiquity. Nearly all pagans worshiped the sun, under different names, as the giver of light and life, and their festivals in its honor took place in December. The ancient Teutons observed the season by trimming a fir tree, for they thought of the sun, riding higher and higher in the heavens, as the spreading and blossoming of a great tree. It may be that this ancient reverence for Nature explains the establishment of the Christmas tree as an institution. Many of the ornaments commonly used on Christmas trees are of pagan origin. The lights, to the primitive mind represented the lightning flash; the apples, nuts, and balls symbolized the sun, the moon, and the stars, and the little animals symbolized the sacrificial offerings to the sun god.

As Christianity replaced paganism, the Christians, following the tolerant spirit of their Master, adopted some of the old customs, merely changing their meaning and application; and so we have the balls and glittering tinsel which bring joy to the kiddies' hearts. In decorating the festive tree today, however, the ornaments are usually placed entirely with an eye to balance, beauty and display; but by observing a definite procedure in placing the various ornaments, the entire story of the nativity of the Christ Child may be told. A star placed at the

very top of the tree symbolizes the star which guided the wise men to the lowly stable at Bethlehem. Just below the star numerous angels are suspended to represent the heavenly host. Beneath them place the shepherds, and another angel facing the shepherds. "And there were in the same country shepherds abiding in the field, keeping watch over their flock by night. And, lo, the angel of the Lord came upon them, and the glory of the Lord shone round about them; and they were sore afraid. And the angel said unto them: 'Fear not; for, behold, I bring you good tidings of great joy, which shall be to all people. For unto you is born this day, in the city of David, a Saviour, which is Christ, the Lord. And this shall be a sign unto you; ye shall find the babe wrapped in swaddling clothes, lying in a manger.' And suddenly there was with them a multitude of the heavenly host, praising God, and saying, 'Glory to God in the highest, and on earth peace, good will toward men'."

In the upper part of the tree, near the trunk, is placed a figure of the Christ Child, the babe born to bring peace, joy, and happiness to the world. Near by are placed other figures, representing Mary, the tender mother, and the wise men from the East. "Now when Jesus was born in Bethlehem of Judea, in the days of Herod the King, behold, there came wise men from the East to Jerusalem, saying, 'Where is He that is born King of the Jews? For we have seen His star in the East and we are come to worship Him.' And when they were come into the house, they saw the young child with Mary, His mother, and fell down and worshiped Him; and when they had opened their treasures they presented unto Him gifts—gold, and frankincense, and myrrh." And so we may undoubtedly trace our custom of presenting gifts to loved ones at Christmas time to this long-ago pilgrimage of the wise men of the East, who traversed desert, city, and plain, guided only by "a star by night and a pillar of cloud by day," in search of Him who came to redeem the world.

Santa Claus, that chubby



A LIVING CHRISTMAS TREE

figure, with his rosy cheeks and gray beard, the embodiment of love and generosity and patron saint of the feast, has a prominent place on the little tree, as well as in the hearts of children. Hung all about him are small fruits, candy, nuts, and baskets and cornucopias filled with bonbons. Tiny ornaments, representing the various gifts this jolly little old man brings to all good children, may also be used.

Throughout the middle of the tree are placed miniature dolls, dressed to resemble the inhabitants of the Orient and the Occident. The thought conveyed in this arrangement is that the Child of Bethlehem was destined to become the Saviour of all mankind.

On the lowest branches are tiny forms of the domestic animals and fowls, which are used on the Christ-

mas tree to remind us of the lowly birth of the Saviour. Green, red, and white candles, set in holders to match, are fastened on nearly all the branches and brilliant sparkling tinsel is festooned about the entire tree. Tradition tells us that a lighted candle set in the window on Christmas Eve will guide the Babe of Bethlehem to your home, that He may bring you happiness. The lighted candles on the tree symbolize Christ as the Light of the World, while the brilliant tinsel decoration may be taken as a sign to His people: "Arise, shine; for thy light is come, and the glory of the Lord is risen upon thee."

The Christmas colors—green, red, and white—are emblematical of everlasting life, cheerfulness, and purity.

Thus do we make our Christmas tree beautifully symbolic of the wonderful story of the nativity.

The Dedication of the Rothrock Memorial Tablet

THE members of the Pennsylvania Forestry Commission, in tribute to the memory of their deceased colleague, Dr. Joseph Trimble Rothrock, appointed

a committee, consisting of Dr. Henry S. Drinker, President of the Pennsylvania Forestry Association and a member of the Commission; Major R. Y. Stuart, Secretary of the Department of Forests and Waters and Chairman of the Commission; Colonel H. W. Shoemaker, a member of the Commission; Mr. G. H. Wirt, Chief of Bureau of Forest Protection, and Professor J. S. Illick, Chief of Bureau of Information, to procure and place in the State Capitol building at Harrisburg a memorial tablet containing a bronze medallion portrait of Dr. Rothrock with an appropriate inscription.

The legislature authorized the project and immediately resolved for its execution. The resolution was approved and signed by Governor Pinchot at once.

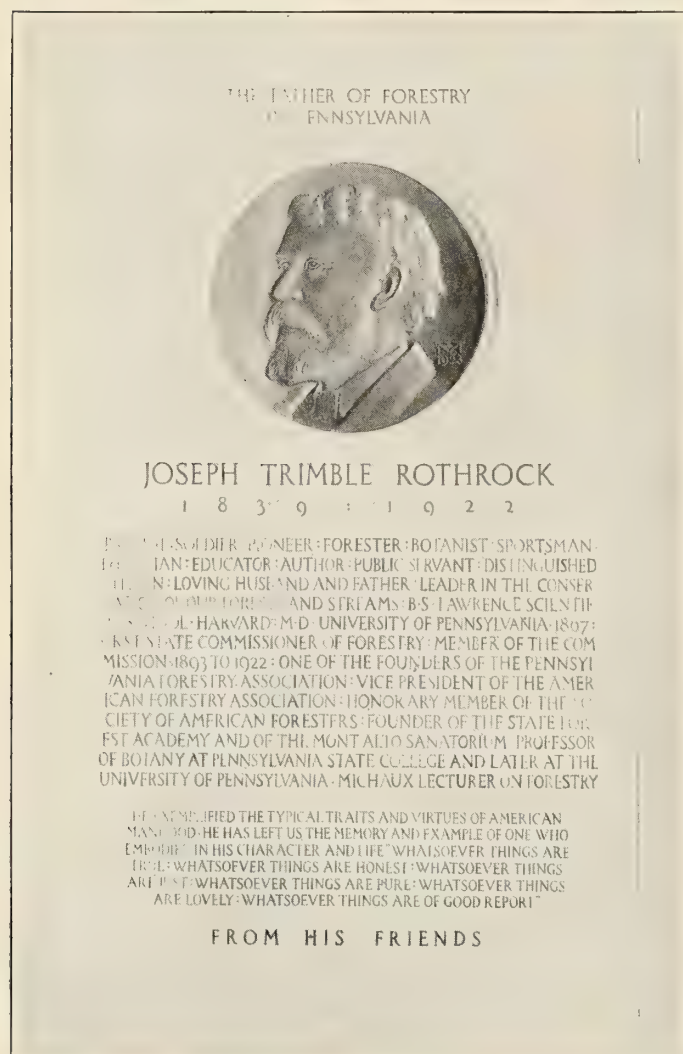
The tablet was dedicated and presented to the State of Pennsylvania at a ceremony held in the Rotunda of the Capitol building on October 29, 1923, at which addresses were made.

Following prayer by the Rt. Rev. James H. Darlington, Bishop of Harrisburg, Dr. Drinker made the presentation address, paying beautiful tribute to "a great Pennsylvanian" and reviewing his life and works. Acceptance of the tablet on behalf of the state was made by Governor Pinchot in a few ringing words, in which he characterized Dr. Rothrock's service to "his day, his state, and his nation" as "varied as Roosevelt's service was varied."

... Soldier, sailor, botanist, explorer, farmer, forester.

... It is most fitting that a life such as his be remembered throughout this nation for generations after he is gone. The result of his work will be felt in restored forests, protected industries, full streams, and prosperous people, when even his name may be forgotten."

The Governor was followed by Major R. Y. Stuart, who spoke feelingly of Dr. Rothrock as "The Father of Pennsylvania Forestry."



Good Bye, Chestnuts

BY CHARLES F. THURSTON

THE celebrated naturalist, Thoreau, upon returning an ax that he had borrowed, presented the farmer who was so kind as to let him use it with a bag of chestnuts, saying, among other things: "I surely would hate to be the man who takes out of the boy's life the pleasure of getting chestnuts."

At that time chestnuts were very common, and Walden was not the only place that could boast of them. In the fall you would shuffle through the long yellow leaves while going through the woods and while walking down Main Street. They were everywhere—growing in close battalions in the dreamy woods or standing solitary over the "ancient smithy," flirting with the sunbeams that darted playfully through their spreading boughs to fret the sidewalks with shifting arabesques of purple and gold.

What a majestic creation is an old, patriarchal chestnut tree! And what a thing of beauty! Poised on the brow of a hill, as one will find them quite often in the Berkshires, they impress us with a quiet, insinuating charm. Not so somber as the pine, not so robust as the oak, not so lanky as the elm, not so symmetrical as the popular maple, it has qualities in common with all, and yet an individuality all its own.

Grown-ups may see but its beauty; but boys, real he-boys, boys with good teeth and stomachs, overlook beauty and think only of the brown-coated, pig-tailed, mouth-watering nuts. There are boys that could not be awakened by alarm clocks; yet these same chaps would be out in the wood before sunrise, with a bag under their arms and eyes in their head brighter than those of a squirrel. There may be records of boys who got to the trout streams after the sun was up, but there can be no records of boys who were so negligent about chestnuts. They knew that they had a nimble little rival in the chipmunk, and tried to beat him at his own little game.

"Shuffling through the dry leaves in fall," said an old New Englander, becoming reminiscent, "and finding here and there jewel-like nuts, reminds me of running into the surf at Redondo Beach for moonstones. To see

the burnished, brown nuts blinking beneath a dry, yellow leaf makes it quite easy for one to understand the rapture ex-

perienced by Sinbad while on the island of jewels."

But good-bye, chestnuts! The trees are rapidly dying everywhere.

What was formerly a majestic, soul-inspiring landmark is now but a rotting stump. No more are they seen on Main Street; no longer do they stand in battalions in the forests. They are as few as the veterans of the Civil War and just as decrepit.

"Nothing can be done for them," says Professor Seavers, of the Bronx Horticultural Museum. Professor Seavers is America's greatest authority on fungi, has had about a dozen species of cryptogams named after him, and knows what he is talking about.

"The United States Government has spent thousands—no, hundreds of thousands—of dollars to check the blight, but its efforts are futile; it can do nothing to save the most beloved of all our trees."

"But what is the nature of the blight?" he was asked.

"It is a fungi, technically known as *Endothia parasitica*."

"Since chestnut trees have been standing for thousands of years," he was asked, "how is it that Mr. Endothia got busy doing his mischief just recently?"

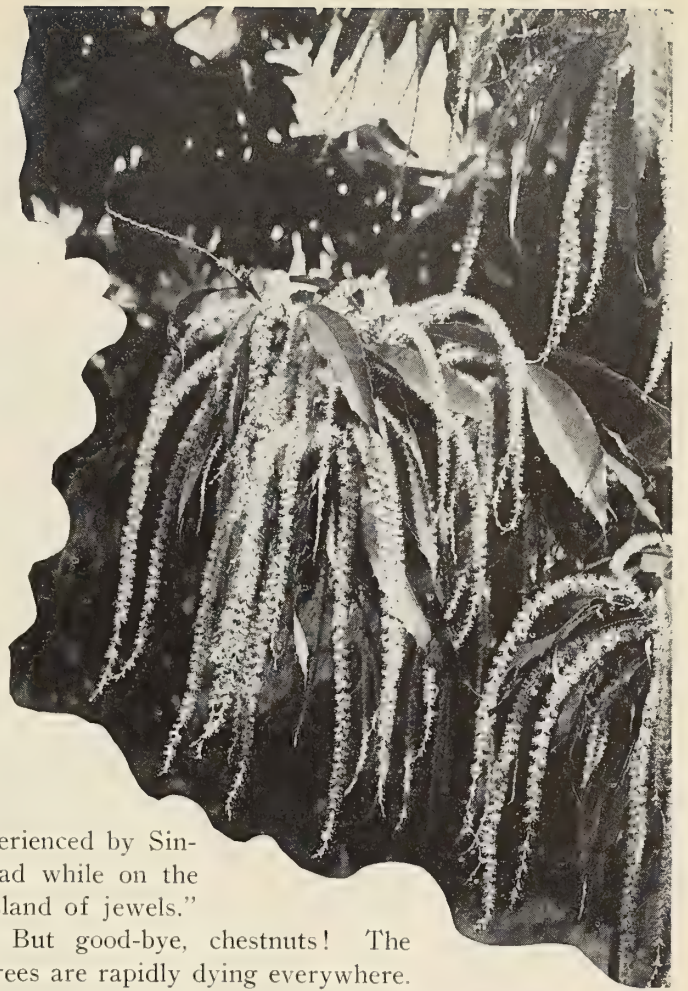
"Because Mr. Endothia, as you call him, is a foreigner."

"I don't understand."

"Well, it's this way. For a very long while we have been importing fruit stocks from China and Japan. This fungus is common in China, but does not thrive as well as it does here. In America it finds conditions so favorable to its growth that it spreads like wildfire. There is nothing known to science that can check its development."

The listener thought back to those good old days when, as a bad boy, he gathered together enough nuts to last far past Christmas, and wiped away a tear. All he could say was:

"Good-bye, chestnuts."



Reddy Junior and the Lookout

BY P. A. THOMPSON

"I SEE him, I see him; there he comes, down by the spring!" Reddy Squirrel was so excited he could hardly hang on to the limb of the twisted fir tree which grew near the top of Sawtooth Mountain. He chattered and pointed and jerked his bushy tail up over his back so hard that he knocked Reddy Junior off the limb and Reddy Junior fell to the next limb below, where he scolded and ran up and down and tried to see the man at the spring. At last he ran out to the very tip of the limb and could see way down the mountain side.

"I see him, too," he cried; "he has taken off the pack on his back and is getting a drink of water out of the spring. Now he is coming on up the trail!" Reddy and Reddy Junior made such a racket and scampered up and down the tree so fast that Sneaky the Camp Robber and his mate came flying over to see what in the world was the matter. Sneaky the Camp Robber flew so quietly that he was very near before Reddy Junior saw him and gave the little squirrel such a terrible fright, for he thought it was Squeaky the Screech Owl after him. Reddy Junior dodged behind the trunk of the tree, and when he saw it was only Sneaky the Camp Robber he scolded him hard for frightening him.

"I don't see why you have to fly so quietly, anyway, scaring a fellow half to death. Why can't you flap your wings and make some noise, like most of the other birds do? But Reddy Junior soon forgot to be mad.

"See! There he comes, there on the trail, there by the big patch of snow!"

"Sure enough," said Sneaky the Camp Robber, and flew down the hill to another tree where he could see better.

Now Reddy Junior was only a few weeks old and had never seen a man before. Reddy Junior had been born down the mountain, quite a long way, in a hole high up in a big Douglas fir tree, where his father and mother had a cosy winter home.

Reddy Junior's father had told him of the queer man who had come up the mountain the year before.

How other men had dragged boards up the steep trail and built a little square house with another tiny square house on top of that; how they had made part of the house out of some funny stuff that you could see right through, and put some of the funny stuff on all four sides of the big house and the tiny house on top, too. Now, of course this stuff was just glass, but Reddy Squirrel didn't know the name of it.

His father had also told him how this man had lived in the house all last summer; how he had strung a long wire all the way up the mountain and hooked a funny thing that rang on the end of the wire, and how the men had looked and looked every day; how the man would run to the funny thing and talk every time it stormed and the lightning hit the trees on the mountains.

Oh, lots of things Reddy Junior's father told him. He had told him of the queer good things to eat which the man kept in the house and which he sometimes threw out; of wonderful tin cans which had things good to eat sticking to the inside, and which the man threw in a big hole down the mountain side. He had told him how the man used to throw crumbs to the little squirrels, and how the squirrels had come closer and closer to the man until finally they had eaten crumbs right out of the man's hand, and had even climbed up on his knee to get the good crumbs.

Of course, Reddy Junior had been wild to go up and see the man as soon as he was big enough to run so far, but his father had never brought him up until today, and, sure enough, the man was just coming up the mountain.

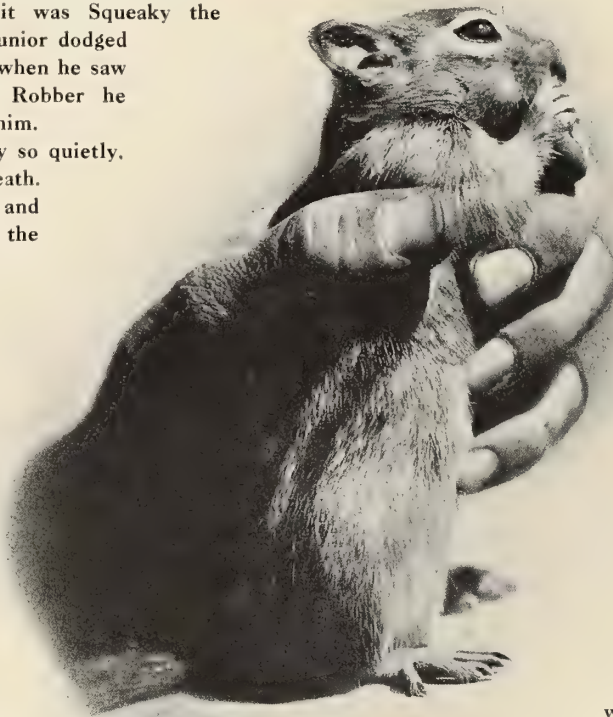
By this time a whole lot of the little folk knew the man was coming, and there was a great chattering and chirping all over the mountain. Stripes Chipmunk and his whole family came racing over the rocks; Pat Woodpecker flew up to a great tall dead tree and pecked it with his hard bill, so that it sounded like a snare drum; Johnny Blue Jay and Monte Magpie both flew up to see what was the excitement, while Blacktail Deer and his little fawn, and Charlie Coyote and Hoot-hoot the Big Owl, all hid in the edge of the timber and tried to see everything. Only Hoot-hoot the Big Owl couldn't see anything yet, because it was still sunshiny, and he scolded all the rest and tried to get them to tell him all about it.

Reddy Junior and his father chased over the rocks and whisked into a hole under the cabin. "We will wait here until he comes up close and I can tell whether it is the same man or not," said Reddy. "Some men would shoot us if they could, so you hide behind

me." But Reddy Junior was too anxious to see everything and crowded right up alongside his father and stuck his little head right out of the hole. His father and Stripes Chipmunk both scolded him, but he didn't jump back until the man came right around the corner of the house and nearly stepped on him. Then you bet he scuttled back down the big hole, for he was badly scared. You see he had never seen a man close before and didn't realize how big they were.

The man, whose name was Frank Farmer, laughed when the little squirrel ran so fast. "Ho, ho," he said; "you must be one of Reddy's children. Pretty soon you won't be so frightened of me, because I have brought up some of the finest nuts you ever saw this time, and you will soon climb on my knee for some of them."

Pretty soon the squirrels heard a great clattering down the trail, and up came another man with a couple of pack-horses loaded with



things to eat, and bedding, and many other things. Reddy Junior had never seen horses before and he was very, very frightened and hid deep in the cracks in the rocks, where he could just peep out and see them. But he was very curious about all the things which the men took off the horses and hated to leave to go home. His father said it would soon be dark, so they scampered down the hillside as fast as they could go, to their warm nest high in the big fir tree.

Next morning they were up bright and early, and after eating a good breakfast of pine nuts they ran up the hill to the top again. The man saw the little squirrels and chipmunks and threw a handful of nuts to them, and Reddy Junior had the best time ever. He ate nuts until his little sides just stuck out. But, like most bright little squirrels, he was very curious and wanted to know all about the man. What was he doing away up on the mountain? What was the long wire for? What made the little bell on the wall ring?

Whom did the man talk to when he talked to the little bell thing on the wall? He asked so many questions that he got the older birds and animals all interested, too. You see they had never thought much about these



REDDY JUNIOR CLIMBS UP ON THE KNEE OF HIS FRIEND, THE LOOK-OUT MAN, AND EATS NUTS UNTIL HIS LITTLE SIDES FAIRLY STICK OUT, THEY ARE SO FULL

things and did not know themselves, so they started to ask everybody else, and, come to find out, not one of them knew what the man was there for. And then they all got curious, too, and pretty soon they were all gathered around a clump of spruce trees down in the spring gulch, chattering and talking and chirping like everything. Johnny Blue Jay, who had a very loud voice, flew to the top of the biggest tree and shouted for them all to be still a minute. When they all became still he said: "I know where there is an old, old, wise Owl, who lives away off from here in a big hollow pine tree. He is the wisest bird in the whole Forest. I am sure he can tell us all about this man and what he is here for." Then Johnny Blue Jay flew away as fast as he could to see the old Owl, and the others all scattered through the Forest to spread the news about the big meeting the next morning.

The next morning, before it was even daylight, the Forest animals and birds started coming. And just about the time the last of them came along and found a seat on the ground, or on the rocks, or on the trees, they saw Johnny Blue Jay and a great big Old Owl come flying through the sky.

The big Old Owl was pretty tired from his long flight, so he sat on the highest branch of the biggest tree and rested while all the rest of them waited for him to speak. Pretty soon he began to talk, and every one was so quiet that you might have been right near and never heard a sound except the Old Owl.

"Many, many years ago, when I was a very young owl, I lived not so very far away from here. Look over there!" And they all looked where he was pointing. "See that great brown and black patch on the North Mountain? Years ago that was the finest place for Forest birds and animals you ever saw. There were miles and miles of green hills and meadows and creeks and pretty little lakes and ponds. Then there were many, many happy and contented birds and animals. Thousands more than there are now. Now there is nothing but black and burned snags. The creeks and ponds are dry in the summer. There is no shade and no place to nest or to hide. Only big heaps of ashes, which the wind picks up and whirls around and around, and the wind moans through the dead tree-tops, and there is not one cheerful bird song to be heard. Nothing is growing but a few weeds. There is no

food for us there. My father and my mother were burned up over there and thousands of other birds and animals were burned also. One day, when the woods were very dry, some men came along

hunting and one of them carelessly dropped a match in the grass and walked along. The wind blew the match into a little flame, and the fire spread and spread for days and days, and the smoke was so black it was almost dark, and the animals and birds did not know really which way to run; so thousands of them were killed. The big fire burned all summer, until the rain put it out. That winter many more of the birds and animals starved because they had nothing to eat. All the nuts which the squirrels had cached were burned up. The other animals had to leave and go to a strange country just as winter started, and many of them died. It was an awful, awful time for the Forest birds and animals." And the Old Owl bowed his head and a big tear ran down from one eye.

"But now," said the Old Owl, after he had wiped away his tear, "but now men are a lot better in that way. Most of them are careful with fire in the Forest, for they realize that it destroys not only the timber and the Forest cover, but the wild life in the woods; the creeks run dry; the meadows are dry and barren, and the falling trees soon make it impossible for them to get through the hills. They realize now that all the timber is needed more and more every day and they know that if they burn up the timber it will take a hundred years to grow another Forest. And so some men are trying to stop the Forest fires. This man on our mountain is helping. He is one of the best men they have. He watches and watches every day, all summer long, to see that no fires get started in his country. When some careless or real bad man, or even the lightning, starts a fire in the woods, this man sees the smoke at once, because he can see over everything, and he tells the other men, who are scattered through the woods, right where the fire is located, so that they can hurry up and get to it and put it out before it gets big, and may perhaps catch the man who started it."

Here the Old Owl was interrupted by Reddy Junior, who was curious and couldn't keep still.

"How can he talk to other men so far away?" Reddy Junior wanted to know.

"He talks over the long wire," said the Old Owl. "Sometimes I have seen boys, who did not stop to think what they were doing,

A BEAUTIFUL COMMUNITY TREE



This tree was erected in a civic center in San Francisco a couple of years ago and was generally known as the San Francisco Examiner Christmas Tree. The picture was sent in by Ranger Robinson, of the Stanislaus National Forest, where the tree was cut. It was the third tree taken down, for the other two were broken either in falling or loading on the flat car for transportation to the city. Finally, the last tree was lowered with cables and the branches cut off and shipped separately, being wired after reaching San Francisco. The picture shows the tree fully decorated and ready for the celebration on Christmas Eve.

SIX RULES FOR SPORTSMEN

1. BE A REAL SPORTSMAN.—There is more honor in giving the game a square deal than in getting the limit.
2. MAKE SURE IT'S A BUCK.—If you can't see his horns—she hasn't got any.
3. HELP TO ENFORCE GAME LAWS.—Game and fish are public property, and only a game hog will take more than his fair and legal share. Violations should be reported to the nearest warden, forest ranger, or game protective association.
4. RESPECT THE FARMER'S PROPERTY.—He regards the man who leaves his gates open, cuts his fences, disturbs his live stock, or shoots near dwellings as an outlaw. Put yourself in his place.
5. BE CAREFUL WITH YOUR CAMP FIRE AND MATCHES.—One tree will make a million matches; one match can burn a million trees.
6. LEAVE A CLEAN CAMP AND A CLEAN RECORD.—Unburied garbage, crippled game, and broken laws are poor monuments for a sportsman to leave behind him.

FROM THE PENNSYLVANIA DEPARTMENT
OF FORESTRY

"A township where one primitive forest waves above, while another primitive forest rots below—such a town is fitted to raise not only corn and potatoes, but poets and philosophers for the coming ages."—*Thoreau*.

PRIZES FOR CHRISTMAS TREE
PHOTOGRAPHS

ARE you going to throw away your Christmas tree again this year, and then next year have to buy another one, or are you going to use a growing tree—one in your yard or one planted in a tub and brought into the house on Christmas Eve—or the community tree growing in your neighborhood, or any other tree that lives, as your children live, for one Christmas after another?

If you are, take a photograph of it, after you have it fully trimmed and ready for Santa Claus, and send the photograph to AMERICAN FORESTRY.

We will pay \$15 for the best photograph of a growing Christmas tree, and \$5 each for all other photographs selected.

Conditions—1. The tree must be growing and in Christmas garb. There are many novel ways of having Christmas trees without killing them and later consigning them to the ash heap.

2. Write your name and address and a description of the picture plainly on the back of the photograph or a sheet of paper attached to it.

3. Mail the photograph before January 15th to the address below, inclosing return postage if you desire it sent back.

CHRISTMAS TREE CONTEST EDITOR,
THE AMERICAN FORESTRY MAGAZINE,
Lenox Building, Washington, D. C.



SENATOR CHARLES L. McNARY, CHAIRMAN, SENATE COMMITTEE ON REFORESTATION, AND SUPERVISOR M. A. BENEDICT OF THE SIERRA NATIONAL FOREST, PONDERING A FOREST QUESTION IN THE WOODS. IS THE SENATOR STUMPED?

Why American Forestry?

A Letter from a New Subscriber

"I SHOULD like to say a word at this time and briefly attempt to express my sentiment regarding the forest situation in this country today.

"For the past twenty-five years I have been going to the 'woods' of northern Maine for recreation and health, and that country holds some very dear and pleasant memories for me. As I go back year after year and see the changes, it rather frightens me. If in that short period such destruction can be done as I have seen, the end of our forests and all they stand for is not far distant.

"I cannot understand the attitude of the American people, of their apparent disregard and ruthless destruction of the natural resources of this country, the biggest asset they have. Something has to be done, and done quick. If an organization such as your Association can influence, through legislation or otherwise, the administration of protective measures for the forests, then God speed you on your way. I trust I may be able to do my share.

"Next year I hope to be able to increase my membership to a higher rank.

"Very sincerely yours,

"J. M. ALLEN,
"Boston, Massachusetts."

Better Work

How the Teeth of the Disston Invincible Chisel Tooth Saw Are Locked in Place

Patented April 13, 1920



FIG. 1

The lock which holds the teeth in the Disston Invincible Chisel Tooth Saw is such that it is impossible for the teeth to start from their proper position while the saw is in use. It also holds the teeth securely in central position and in perfect alignment at all times.

Due to the eccentric action of the holder at the point where it engages with the tooth, the maximum amount of pressure is brought to bear on the tooth when it is only partially turned into place in the socket. This point is indicated by the arrow in Figure No. 1.

As the tooth is turned further into position this pressure is relieved and, as shown at the point indicated in Figure No. 2, the tooth is firmly seated in its socket in cutting position.

It can be seen, therefore, how this patented locking feature makes it impossible for operating stress of any kind to even start the tooth from its position. On the contrary, every stress exerted on the cutting edge of the tooth tends only to seat it more securely.

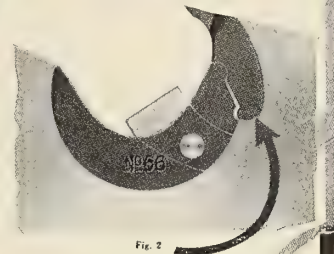


FIG. 2

We'd have called this new saw the Bull Dog

if we had thought only of the tooth-locking feature when naming it. That's the kind of teeth it has—teeth that dig into a log with a bite that locks them more firmly in place. Due to a patent lock, the tougher the wood, the more pressure on the tooth, the tighter it holds. It will not come loose or start forward. An examination of the above illustrations will explain why.

This patent lock is only one of several new features which make this saw a real economy for mill men. You should know about them. We will send you illustrated description on receipt of the attached coupon with your name and address.

HENRY DISSTON & SONS, INC.

Makers of

"The Saw Most Carpenters Use"

PHILADELPHIA, U.S.A.

**HENRY DISSTON & SONS, Inc. (Desk S),
Philadelphia, Pa.**

Please send, without obligation to me, pictures and description of your NEW INVINCIBLE SAW.

NAME

STREET AND NO.

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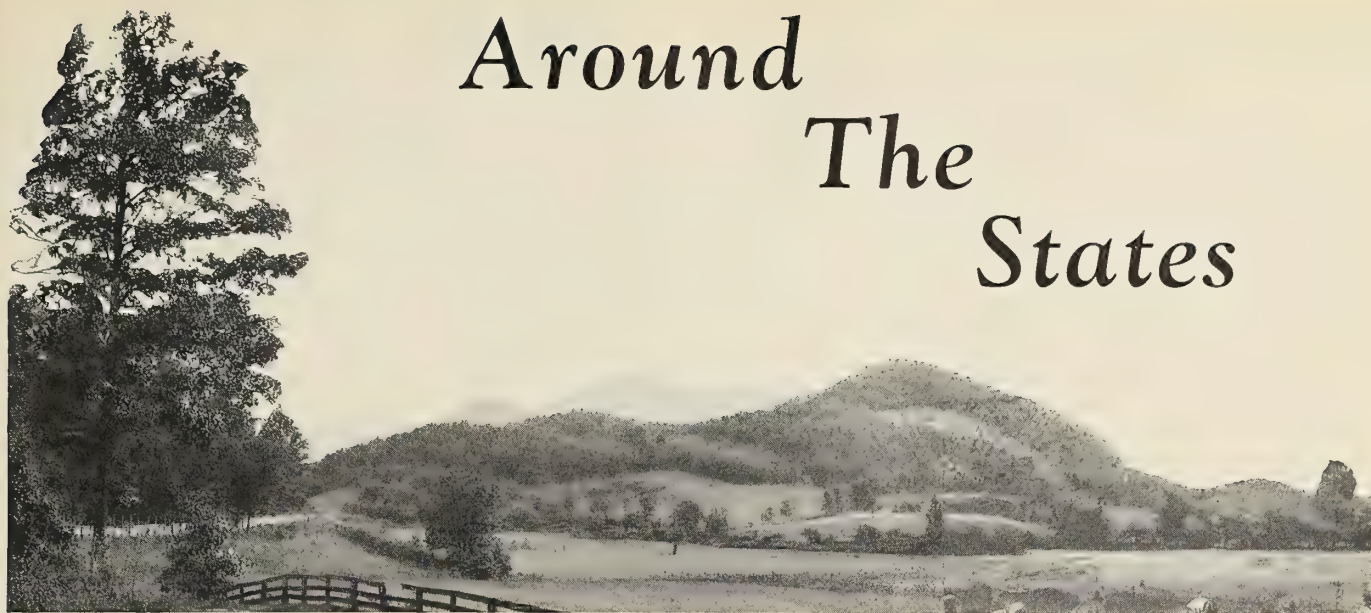
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Send all orders to **The American Forestry Association, 1523 L Street, Washington, D. C.**

Around The States



CONNECTICUT TO TRY NEW FIRE PREVENTION

A new method of fire prevention is to be tried in Connecticut this coming season by the railroads. It will consist of a line of cinders three feet to 4 feet wide and six inches to eight inches deep, placed at a distance from the track greater than that to which a spark is likely to light and start a fire. This will make a comparatively safe line to burn from, and if a fire is started between the track and the line it will not be very apt to cross over it and get into the adjoining timber land. This will probably be rather expensive, but if it works satisfactorily it will be a great saving in the long run.

The Talcott Mountain Forest Protective Association has been organized to co-operate with the State of Connecticut, through the State Forester, in protecting from fire the woodland of its members and to promote the raising of timber. The membership already embraces owners representing 10,000 acres of forest land.

FOREST CROP IMPORTANT TO OHIO

That forest products are of great importance among the industries of southern Ohio is proved by an intensive forest survey of ten hilly counties completed within the year. The counties covered by the survey are Scioto, Pike, Lawrence, Adams, Vinton, Jackson, Ross, Athens, Hocking, and Gallia. Comparing the value of the forest products of these counties with the chief farm crops, the Experimental Station foresters find that the timber crop ranks above wheat and nearly equals corn in value.

The value of the year's timber crop was \$3,190,250, while the value of the entire corn crop was \$3,700,000. In making this comparison, foresters call attention to the fact that these counties include the rich corn land of the Scioto Valley.

FLORIDA FRUIT GROWERS REQUIRE WOOD

Crate manufacturers in Florida figure on using 175,000,000 board feet of lumber in containers for fruit and vegetable crops this season. This amount of lumber is equivalent to that used in building about 9,000 average frame houses.

Through the efforts of Mr. J. B. Graves, of Jacksonville, Florida, one of the schools has organized a class to study Florida forestry conditions, and Secretary Russell W. Bennett, of the Florida Forestry Association, is co-operating to make the course interesting and educational.

MT. TOBY FIRE TOWER DEDICATED

Mt. Toby, in Sunderland, Massachusetts, with 755 acres of adjoining territory, has since 1916 belonged to the Massachusetts Agricultural College of Amherst. A new concrete and steel fire tower was erected during the summer, making the fortieth, at ten-mile intervals, throughout the state, enabling the fire wardens to have a clear vision of twenty miles around their positions.

In addition to the dedication of the tower on October 12, "Mountain Day" became an institution of the M. A. C. About 800 students, members of the faculty, and friends made the trip from Amherst. In the natural amphitheater on the mountain slope, President Kenyon L. Butterfield introduced William A. L. Bazely, State Commissioner of Conservation, who told of the forestry work which is being accomplished.

COLORADO'S PROPOSED STATE FOREST

During the late summer members of the State Land Board of Colorado, with State Forester Morrill and representatives of the United States Forest Service, rode over portions of the 100,000-acre division of the White River National Forest, which it is

proposed shall eventually be established as a State Forest in lieu of 100,000 acres of state school sections scattered throughout the National Forests of Colorado.

This area lies between the Moffat Railroad and the flat tops, and has a length of ten or twelve miles and a breadth of four or five miles. Practically all of the school sections within the National Forests have been appraised in part by the State Forester and the remaining larger portion by the National Forest officers. While it is too early to predict that the consummation of the exchange can be effected, it is interesting to note that the state officials are seriously considering the matter.

SOUTHERN FORESTRY CONGRESS

January 28, 29, and 30, 1924, have been set as the dates for the Sixth Forestry Congress at Savannah, Georgia. Plans for the Congress are rapidly taking shape. The business men of Savannah, particularly of the naval stores and lumber industries, are actively at work through the board of trade to provide a welcome and entertainment for what is predicted will be the greatest forestry meeting ever held in the South.

PACK GIVES DEMONSTRATION FOREST

The gift of one thousand acres of Adirondack land to the New York State College of Forestry by Charles Lathrop Pack, of Lakewood, New Jersey, has been announced. The property will be known as "The Charles Lathrop Pack Demonstration Forest." Mr. Pack was for many years president of the American Forestry Association. This splendid area, located on Barber Point, Cranberry Lake, has for nine years been the temporary abiding place for the Syracuse foresters. The acquisition of this tract in perpetuity makes possible the carrying out of many plans which the Syracuse College has in mind.

FOREST FIRES HEAVY IN NEW HAMPSHIRE

Heavy rains occurring near the close of October ended one of the dryest and most hazardous fire seasons on record. It is too early to furnish a record for the fire season just passed. The fire in the Beebe River territory, in the town of Waterville, not only burned over but destroyed everything on more than 2,000 acres. This fire cost nearly \$5,000 to extinguish and the losses were high, even though little green timber was destroyed. This fire destroyed large quantities of camp equipment and stores, as well as trestles, log piles, and rolling stock, to say nothing of young forest growth. The soil was burned so hard that bare rocks were exposed over hundreds of acres.

The hunting season was suspended for a brief time late in October, before the rains began. More than the usual number of fires occurred this season from portable mills, and the matter is being carefully investigated. Except for the proficient work of the look-outs and the wardens, there is no question but fire losses for the year would be enormous.

Co-operative eradication in blister-rust control terminated, for the present season, on September 30.

The total area from which wild and cultivated currant and gooseberry bushes have been removed is approximately 950,000 acres. The cost per acre has varied according to conditions, but has averaged a fraction over 20 cents.

Ranger Bill says: "It sure must be discouragin' to be a monarch of the forest one day and a toothpick the next.—*California District News Letter*."

WISCONSIN PULP COMPANIES FOR FORESTRY

A meeting of pulp and paper operators convened at Wausau, Wisconsin, on October 23 for the special purpose of reviewing the situation respecting forest supplies in Wisconsin and to discuss the prospects for forest replacement. Eighteen companies were represented. The chairman of the State Tax Commission, the Conservation Commissioner, the State Forester, and Dr. Baker, of the American Pulp and Paper Association, were present, and a very encouraging discussion, so far as forest replacement was concerned, developed. The meeting resulted in the formation of the Wisconsin Forest Protective Association, with D. C. Everest, general manager of the Marathon Paper Mills of Rothschild, as president, and plans were immediately laid for a forestry program, the ultimate aim of which would be the encouragement of private land-owners in the practice of forestry. A real and very active interest was

shown on the part of all present in the future of the forests of Wisconsin.

LUMBER PRODUCTION IN TENNESSEE

The lumber production in Tennessee for 1920 was four hundred and forty-four million board feet less than in 1909; but, on account of the high price, the 1920 crop brought over ten million dollars more than that of 1909. The bigger price was for a little more than half the amount of lumber. Forest fires helped, and are still helping, to make a bigger price for a small "lumber bill." The forest fire burns a part of our pocketbook every time it burns. The lumber user pays for it in the end.

PRAIRIE BOYS FIND A FOREST

In 1896 and 1897 the State of Kansas, in co-operation with the United States Depart-



ment of Forestry, planted a grove of Jack, yellow, Austrian, and Scotch pines.

In the fall of 1903 the average diameter at four feet for the Jack pine was 1.8 inches and for the Scotch pine 1.79 inches. The bull pine averaged but three-eighths of an inch at four feet.

Twenty years later this year's forestry class of the Kansas Agricultural College finds a very favorable proportion of the trees measuring above six inches at four feet from the ground and an average height of about twenty-five feet. These boys from the farms and ranches find no difficulty in assigning uses for the poles of various sizes and lengths. A considerable amount of firewood has been yielded from the thinnings, and while it is still a good way from saw timber, it is yielding the young people of Kansas a good return in other ways, as the grove is a favorable hiking spot. In another

part of this grove the Department has arranged tables and benches, and many tourists make use of this camping place during the season.

This grove is a part of the forestry experiments, the oldest dating back to 1874. The early plantings were made by men whose idea of growing forests was to plant them on the poorest of land.

BOY SCOUT CAMPAIGN IN PENNSYLVANIA

Because of the interesting nature of the work and the active part Boy Scouts have taken in the conservation of Pennsylvania forests, Forest Commissioner R. Y. Stuart has suggested that the Boy Scouts of the state inaugurate a campaign every fall of collecting walnuts, butternuts, and hickory-nuts and of planting them for future nuts and timber.

Aside from the practical value of the project, it has an educational advantage as well. The boys would be made familiar with the identification of the trees, the time and method of collecting the nuts and of storing them over the winter, and the actual work of planting in the spring.

Pennsylvania has 100 steel fire towers erected for the purpose of quickly detecting forest fires.

WILL AID NEW MEXICO HANDLE TIMBER LANDS

An agreement whereby timber on lands belonging to New Mexico and lying within or near the National Forests will be handled according to the rules and regulations for handling timber on National Forests has been made between the United States Department of Agriculture and the State Commissioner of Lands. Approximately 215,000 acres of land, estimated to contain 550,000,000 board feet of timber, are involved.

The State of New Mexico has no organization equipped to administer the use of timber on state-owned lands so that continuous timber production may be assured, and in recent years the Forest Service has informally aided the state in handling sales. Under the agreement recently signed and approved, the Federal Government will now lend full co-operation to the state in handling the timber on its lands.

ROADSIDE TREES FOR CALIFORNIA

Over 60,000 shade and ornamental trees were made available last month by the State Forester's office. The trees were raised at the state nursery and are to be used in planting many miles of shade trees along the highways of California.

With this planting, the State Forester opened his campaign of winter and early spring planting along roadsides throughout the state.

Plantings this year will be done under an entirely new policy, recently announced by the State Shade Tree Committee, which is designed to systematize the effort to beautify the highways of the state.

While communities may purchase trees for public use, tree-planting along the state highways in the future will be done by the Highway Commission directly, the cost of planting and maintenance for one year to be borne by clubs, chambers of commerce, boards of supervisors, and other officials and organizations interested.

Pacific coast states will receive the following sums as a result of sale of material from National Forests during the fiscal year 1923. The 10 per cent available for roads and trails in the forests is included. California, \$445,675; Idaho, \$208,188; Montana, \$105,838; Oregon, \$235,357; Washington, \$120,741.

VIRGINIA COUNTIES CO-OPERATE IN FIRE PROTECTION

Two additional counties, Henry and Pittsylvania, have just made voluntary appropriations for co-operation with the State Forestry Department in forest-fire protection, making a total of 48 out of the 100 counties in the state in which an organized system of protection was in effect during the fall fire season. These appropriations vary from \$75 to \$360 a year for each county, and constitute about a third of the public funds available in each county, the balance coming from the State Forestry Department and the United States Forest Service. These small amounts are only sufficient to provide "skeleton" systems of fire protection, whereby a few forest wardens are paid for enforcing the forest-fire laws, doing educational work, and for taking leadership and responsibility in fire-fighting.

MASSACHUSETTS ACQUIRES STATE FORESTS

Acting on the recommendation of Conservation Commissioner, Wm. A. L. Bazeley, supplemented by the earnest appeal of the Massachusetts Forestry Association, the General Court of 1920, by an overwhelming majority, passed an act authorizing the Commissioner of Conservation to acquire in the name of the Commonwealth 100,000 acres of wild and waste land for development into state forests. The passage of this act was sufficient proof that the economic need of a reforestation program was clearly recognized. Acting under the provisions of this act, the Commissioner of Conservation has been purchasing land steadily, until at the present time the state owns approximately 65,000 acres.

Coincidental with the purchase of land has been the development of nurseries for the production of stock for use in planting state-owned land as well as to meet the demands



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NEW JERSEY REORGANIZES FOREST FIRE SERVICE

Forestry in New Jersey has just taken a tremendous forward step. A complete reorganization of the State Forest Fire Service has just been effected. As now organized, the Forest Fire Service commands the service of a sufficient number of salaried state employees to assure direct personal supervision by a state warden to all work of fire prevention and fire-fighting in the entire forest area of the state. A force of thirty-one new wardens has been added, each completely responsible for fire protection in a specified area. The previous system of local fire wardens has not been discarded, but will continue work under the supervision and control of the new state force.

A state quarantine has been established against Christmas trees from the New England States to prevent importation of the gypsy moth into New Jersey. This measure is turning many local dealers toward home-grown sources of supply. Native trees entirely suitable for Christmas use are very plentiful in many sections, and the Forestry Department is endeavoring to guide both the buyers and the land-owners to make this new demand a means of improvement work in the young stands at a profit and not a curse to the next tree generation. The situation has already reacted as a stimulus to forest planting, with Christmas-tree production as one feature of the plantation.

ILLINOIS FINDS NEW USE FOR FORD

Perhaps the running of a strip two miles wide, with a Ford in the center position usually occupied by the tallyman, may not be out of the ordinary, but to some it may bear a suggestion as an ideal way of cruising. This method is being used in Illinois in completing survey work in counties which are made up of a rather large per cent of prairie land, where detailed mapping of the whole county is too

expensive. Where the roads are all laid out at right angles and are a mile apart, the plan is to use one road as a center line, mapping for a mile on each side of this road. By covering a rather long strip, say 60 miles, and offsetting, it is believed that a fairly accurate estimate can be made of the acreages of timber of various classes in such counties, where woodlots are very scattered, except along streams.

A preliminary report on the economics of forestry in Illinois will be issued some time this winter, but other projects, such as the compilation of data on farm woodlots derived by the questionnaire method and more data on the wood-using industries of the state, will be continued as work for the next two years.

STATES PLANTING TREES ALONG HIGHWAYS

The Forestry Department of Minnesota is planting 30,000 trees along the highways. In Indiana the State Forester has recently placed about \$2,000,000 worth of walnut and hickory trees in the odd places along the highways.

During the last five years forest fires have swept about 56,000,000 acres of wooded lands. These devastating fires are one reason for the greatly increased cost of timber and its products. The majority of forest fires are caused by carelessness and are therefore preventable.

Revenues from the National Forests during the fiscal year ending June 30, 1923, totaled \$5,335,818. Most of the money received came from sales of matured timber and from sales of grazing permits.

OHIO FOR STATE FORESTS

The outlook for forest progress in Ohio during the next two years is encouraging, due to better financial support and a greatly aroused interest throughout the state.

The last General Assembly appropriated the following amounts for the Forestry Department for the biennium, July 1, 1923, to June 30, 1925.

Acquisition of state forests.....	\$100,000
Forest nurseries.....	25,000
Fire protection.....	18,000
Maintenance, additions, and betterments for state forests and parks.....	18,000
Administration, investigations, extension, and publications.....	50,000

Ohio's problem is largely one of farm forestry, for the farms of the state contain the great bulk of the woodland. The public forest program, as far as state forests are concerned, cannot, under present conditions, call for the acquisition of an area in excess of 300,000 acres. Political subdivisions could acquire an additional 200,000 acres of land suitable for forestry and park purposes. It is, of course, impossible to estimate what the state's ultimate forest area will be, but

at the present time the state could well devote 4,000,000 acres to forestry, and it is probable that by using the lower grades of agricultural lands this area may be increased to 5,000,000 acres. Unimproved land in farms increased 700,000 acres during the two decades between 1900 and 1920. Timber production, therefore, must be largely in the hands of farmers. The state forests will be a factor, but their greatest usefulness will be largely for the purposes of experiment and demonstration to pave the way for private effort.

With an appropriation of \$50,000 in 1921-22 there were acquired some 8,400 acres of state forests, at an average cost of \$5.69, including overhead charges. There are now 10,125 acres in state forests. In 1921 an additional 10,000 acres were purchased jointly for game refuge and forestry purposes, from other funds. The Forestry Department is now acquiring land with the appropriation of \$100,000, which was available July 1.

Last July the state came in possession of the John Bryan State Park, a gift of the late John Bryan. The tract contains 500 acres, 300 of which are wooded, the balance being available for planting or other purposes. This park is one of the finest scenic areas in southwestern Ohio.

The last General Assembly amended the state forest law, permitting the Forestry Department to acquire forest parks with intent to include areas of outstanding scenic value which are worthy of preservation and which should be made available for public use. The general appropriations for forestry in Ohio for the next biennium were increased 125 per cent over those for the last two years.

BOOKLET ON SOUTHERN APPALACHIAN FORESTS

"The National Forests of the Southern Appalachians" is the title of a very attractive booklet just issued by the Forest Service. It deals primarily with the many excellent recreational advantages of the forests of North Carolina, Georgia, Virginia, West Virginia, South Carolina, and Georgia, a region becoming known as the "Playground of the South and East."

Many well-known resorts are either within or adjacent to the boundaries of these southern forests. Asheville, North Carolina, in the "Land of the Sky," and the Natural Bridge of Virginia are two of the better-known places. The historic Shenandoah Valley and the country between Atlanta, Georgia, and Knoxville, Tennessee, also offer many delightful recreational areas.

The southern Appalachian forests were acquired under the Weeks law for protecting watersheds of eastern rivers and now embrace 1,500,000 acres, with plans calling for purchasing an additional 4,000,000 acres.

CHESTNUT BLIGHT IS MOVING RAPIDLY SOUTHWARD

The United States Bureau of Plant Industry reports that the chestnut blight has been spreading rapidly southward, as well as northward and westward, since its introduction into this country from Asia. Recently a new infected area was found covering parts of Greenville County, South Carolina and Henderson and Pulp counties, North Carolina. This large infection is moving miles ahead of the main line of advance of the disease and is spreading rapidly. The indications are that the chestnut growth of the southwestern part of North Carolina, northern Georgia, and southeastern Tennessee will be killed sooner than previously estimated. The zone of heavy infection has been advancing in the south on an average of between fifteen and thirty miles each year.

AIR SERVICE AIDS FIGHT AGAINST BLISTER RUST

The Air Service of the Army and the Department of Agriculture are co-operating in efforts to stop the inroads of the white-pine blister rust, which has found its way into the forests of British Columbia and Washington and is now traveling southward. A flight over the forest area of the Northwest enabled the Government to make in four hours a survey which would otherwise have taken several weeks, and could not have been made with such thoroughness by any other means of transportation. The blister rust, if not stopped, will reach the sugar-pine areas of California and cause disastrous havoc.

A "HARDING" OAK AT EVERY SCHOOL

The State Forester of North Carolina is urging every school in the state to observe Arbor Day, November 2, by planting a memorial oak for the late President Harding.

In his last public utterance Mr. Harding strongly endorsed the conservation policy of the Government, saying that the development of the timber and other natural resources must have in view the permanent well-being of the country rather than of the investors who are seeking wealth to enrich homes elsewhere. Speaking of Alaskan conditions, which he had just returned from investigating, he said: "It is better to destroy the defiant investor than to demolish a national resource which needs only guarding against greed to remain a permanent asset of incalculable value." This will remain a cardinal principle in our public conservation policy for all time to come.

The state law provides that "Friday following the first day of November of each year shall be known as Arbor Day, to be appropriately observed by the public schools." What more appropriate action could any school take than planting a tree to the mem-

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ory of our lamented President, who lost his life in establishing rational conservation in our largest territory?

An oak tree is suggested because it typifies strength and true worth. It is long-lived, and though some species are of slow growth, they are beautiful and altogether the most satisfactory trees for such purpose. White oak should be planted when possible, but swamp chestnut oak (in the East), willow oak, and red oak will all make excellent memorial trees.

FIRE SEASON NEARLY ENDED

No more big fires are expected to break out in the eastern, western, and northern National Forests during the rest of the 1923 fire season, according to the United States Department of Agriculture. However, in the southern National Forests the autumn fire season is just beginning and the menace of serious fires in those regions still confronts forest officers.

Recent snows and rains helped to control the fires which were being fought in October in many of the northern forests. Fires in several California forests have also been brought under control and no further outbreaks are expected.

Taken as a whole, the 1923 fire season has been comparatively favorable on most of the National Forests, although destructive fires occurred in Minnesota and southern California. Fires burned large areas outside National Forests in California, the out-

standing fire having been the one that caused such great damage to Berkeley, California.

ERRATA

The publishers of Kinney's "The Development of Forest Law in America" have sent out the following information for the benefit of earlier buyers of the book:

Page 90, line 20, cancel the second word in line, viz, "such."

Page 153, line 2, under "Ohio," for "8920" read "8970."

Page 197, line 32, for "eight" read "eighty."

Page 203, lines 16 and 17, for all of text following the word "law" read "and the exemption covered all increase in value of land or of timber during thirty-five years."

Page 218, line 22, after "Alabama" insert "Oregon."

Page 219, line 17, after "Massachusetts" insert "Michigan."

Page 220, line 24, before "Illinois" insert "Colorado."

Page 240, line 34, for "twenty-five" read "two hundred fifty."

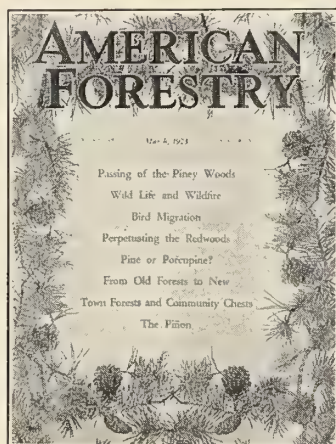
In all late copies of the book an *errata* slip bearing this information is pasted.

A CORRECTION

In the October number the opening of a Forestry School at the A. and M. College at Stillwater, Oklahoma, was announced, but this should have announced a practical course in forestry (not a school), which will enable students to appreciate and understand the principles of forestry.

Membership in The American Forestry Association is open to any person interested in the perpetuation of our forests.

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ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

WANTED POSITION by a forester, age 39—ex-captain A. E. F. Infantry—understands forest management, forest protection, practical lumbering and logging experience. Desire employment by estate or forest production company. If you are in need of a practical, hard-working man, address Box 5070, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C. (11-2-24)

GRADUATE FORESTER, with A. B. and B. S. in Forestry, desires change of position. Especially experienced in reforestation work, and capable of taking charge of a large forest nursery. Also experienced in lecture work and a good talker in public. At present in a responsible State position. Best of references. Can make good at any forestry work. Address Box 5080, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C. (11-2-24)

GRADUATE of New York State Ranger School, experienced in logging engineering in both Canada and the States, wants position. Address Box 5085, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C. (12-2-24)

POSITION in federal, state, or private forestry work, located in either the New England or Atlantic States, wanted by a graduate of the Pennsylvania State College of Forestry 1921. References and details furnished upon request. Address Box 5090, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C. (12-2-24)

GRADUATE FORESTER—B. S. in Forestry with several years' experience in forest engineering, forest pathology, and recreational forest engineering and development, desires a position with state or private interests engaged in forestry. Experience in state forest surveys for three years. Now employed by a sales agency, but desires to return to forestry profession. Best of references. Address Box 5095, care of AMERICAN FORESTRY ASSOCIATION, Washington, D. C.

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RICHARD T. FISHER
Director

Reddy Junior and the Lookout

[Continued from page 755]

throw rocks and break the round glass things or insulators the wire is hanging in, and even men sometimes shoot and break the insulators, which is very wrong, as then the line will not work good and the man cannot talk quickly to the other men who chase fires, and it might be that one broken insulator would cause a whole mountain side to burn over."

"I wish boys and men would not do such things," said Reddy Junior.

"All the wild animals and birds wish it also, for the telephone helps to protect their homes in the woods," said the wise Old Owl.

"But boys and men are getting better and better nowadays, for they know what damage is done by fires to the Forest. By the time the little boys in school today are big men the woods will be very valuable. But these little boys will know all about how to protect the woods, and I do not think we shall have to worry so much from now on."

And then the Old Owl flew away, while the rest of the animals and birds stayed and talked about all he had told them for hours and hours, until they, too, got hungry and scattered through the woods, happy in the thought that they need not worry so much about their worst enemy—fire.

And ever after that, when he had learned that the man would not hurt him, but would feed him good nuts and bread crumbs when he came up close, Reddy Junior used to watch and watch for a smoke somewhere over the Forest, and he would chatter and run around and get real excited until the man would see it, too, and hurry to telephone to the fire-chasers near the fire.

The Ranger Rides an Open Trestle

[Continued from page 743]

I figured maybe there would only be a grease spot left. Anyway, as we neared the end of the trestle the grass wasn't growing underneath the p.n.y.'s feet. I just got him off the track when the train whizzed by.

That little experience put me in a class by myself. As far as I know, I am the only man in the Forest Service drawing pay who hasn't got a heart. Oh, yes; it's there, but it quit beating there and then.

ANTS THAT MAKE SAWDUST

Along many old fallen logs one often sees small piles of sawdust. This is the work of large black ants, who live a social life, excavating tunnels in the old wood. In a colony there are always at least three kinds of individuals—the winged males, which die after swarming and mating; the winged females or queens, which pull off their wings after swarming; and the wingless workers. Winged ants are seen only at swarming times, when new colonies are established.—Yosemite Nature Notes.

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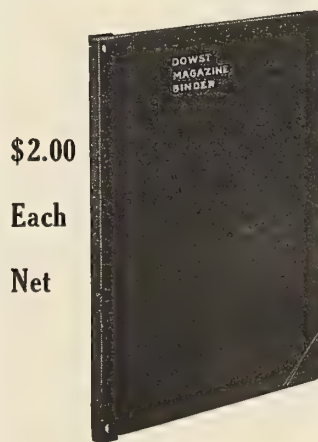
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BOOK REVIEWS

BEAUTIFUL AMERICA. By Vernon Quinn. (Stokes), New York. Price, \$4.00.

The natural beauty and scenic wonders of America are delightfully described. The mountains, lakes, seashore, and springs; the great canyons and natural bridges; the deserts, favorite vacation spots in out-of-the-way places are pictured with the accuracy of a guide book and the charm of a delightful book of travel. America's great playgrounds—the National Parks—the little-known National Monuments, and Alaska are given particular attention, and the descriptions are interspersed with history and Indian lore, giving an added interest to a book which is especially suitable for a gift book.

FARM WOODLANDS. By James Berthold Berry. New York (World Book Company), 1923. Price, \$2.00.

Designed as a textbook for students of agriculture in schools and colleges and a handbook for practical farmers and estate managers, *Farm Woodlands* provides a useful guide to all whose association with agricultural vocations brings them in contact with the growing trees. Wherever trees grow, the forest and its products have always been intimately connected with the pursuit of agriculture. And today, especially, when the timber supply is becoming scarce, the proper care and management of the farm woodlot is vitally important, not only to the farmer himself, but to the welfare of the whole country. Seldom are the timber resources on the average farm fully realized, and this book will perform a real service in presenting valuable information and data on the subject in a thorough and practical way.

SEEING THE MIDDLE WEST. By John T. Faris. (Lippincott), Philadelphia. Price, \$5.00.

Few Americans realize how rich in historical associations the great inland empire of the Middle West is, and this new volume in the Travel Series by Dr. Faris is full of fascinating revelations. The great beauty of that country which the French explorers made historic when they passed the Mississippi; the regions where Abraham Lincoln had his first military experience when in pursuit of Black Hawk, and the beauty of the rolling prairies, the forests and ever-changing landscape comprising that rich and beautiful land of our Middle West are described by the author in his own delightful and inimitable way. This latest addition to the travel literature, with its beautiful illustrations and word pictures, bits of history,

personal and intimate anecdotes of people and places, is a noteworthy contribution.

RANGE AND PASTURE MANAGEMENT. By Arthur W. Sampson. (Wiley), New York. Price, \$4.00.

This book provides systematic instruction for those who desire a practical working knowledge of the subject, as well as for those who wish to follow technical grazing work as a profession and fit themselves to hold such positions as those offered by the United States Forest Service.

Based on the author's long experience in the field, supplemented by further active work combining instruction and investigation, the practical care and management of range and pasture lands in this country are thoroughly treated in this book, and the following subjects are fully discussed, in a clear, readable manner:

1. The character of pasture lands and the history of grazing control.
2. The reseeding of the range.
3. The recognition of the early stages of pasture-forage decline.
4. The leading introduced forage plants and their culture.
5. The adequate protection of timber reproduction against grazing on potential timberlands.
6. The burning of pasture lands and its effect on forage yields.
7. The poisonous-plant menace and its control.
8. Forage estimates and grazing capacity.
9. Methods of studying revegetational problems.
10. Suggestions for instruction in pasture management and live-stock production.

Nearly all of the unusually numerous half-tone illustrations are original, and these are supplemented throughout the text with outline reproductions of accurate sketches of forage plants and grasses, both non-poisonous and poisonous. A plate showing the main stock-poisoning plants in their natural colors is also included. Stockmen, as well as students in the class-room, will find this book especially helpful in their work.

One of the finest, most gracious things you could do is to tell some friend about American Forestry. We would appreciate your courtesy and so would he.

ENTOMOLOGY, WITH REFERENCE TO ITS BIOLOGICAL AND ECONOMIC ASPECTS. By Justus Watson Folsom. Philadelphia (Blakiston's), 1922. Price, \$2.25.

This book gives a comprehensive and concise account of insects, with illustrations by the author. Though planned primarily for the student, it is intended also for the general reader. In fact, it was written in an effort to meet the growing need for a biological treatment of entomology. Because of several excellent works already existent on the classification of insects (notably Comstock's "Manual," Kellogg's "American Insects," and Sharp's "Insects"), the author omitted the multitudinous details of classification and introduced much material that has not heretofore appeared in textbooks. Only the commonest kinds of insects are referred to in the text, so that the reader may easily use the book as a guide to personal observation.

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NEW OFFICERS NOMINATED

The Committee on Elections of the American Forestry Association has announced its nomination of officers to be elected at the annual meeting of the Association, to be held in January. The By-Laws of the Association provide that members may submit to the Committee on Elections nominations for officers, provided such nominations are endorsed by not less than twenty-five members. The committee, however, received no nominations from the membership, and the names as printed below will therefore appear on the official ballot as the slate nominated by the Committee on Elections. The official ballot will be mailed to the membership early in December and will provide space for members to cast their ballots for other names, in the event they do not care to vote for those submitted by the Committee on Elections.

Mr. R. Y. Stuart, Secretary of the Department of Forests and Waters, Harrisburg, Pennsylvania; Mr. William B. Greeley, Chairman of the Committee on Conservation of Forests and Wild Life, the Camp-Fire Club of America, New York City, and Mr. John Foley, Forester, Pennsylvania Railway, Philadelphia, Pennsylvania, are the members of the Committee on Elections, Mr. Foley serving in the place of Mr. George W. Sisson, originally appointed, but prevented from serving on the committee by absence from the country.

The Association's Committee on By-Laws, consisting of Colonel Henry S. Graves, Colonel William B. Greeley, and Mr. F. W. Besley, have submitted a number of proposed amendments to the Association's By-Laws, to be voted on at the same time. These amendments, which will likewise appear on the official ballot, are printed herewith, together with the committee's reasons for the changes proposed.

The officers nominated by the Committee on Elections are as follows:

President:

Henry Solon Graves, Yale University, New Haven, Connecticut.

Vice-Presidents:

W. W. Atterbury, Pennsylvania,

Vice-President, Pennsylvania Railroad.

Charles S. Barrett, Georgia,

President, Farmers Union.

Daniel C. Beard, New York,

Scout Commissioner, Boy Scouts of America.

John W. Blodgett, Michigan,

President, National Lumber Mfrs. Association.

George Cornwall, Oregon,

Publisher, *The Timberman*.

Charles Deering, Illinois,

Director, International Harvester Co.

Samuel Gompers, Washington,

President, American Federation of Labor.

David L. Goodwillie, Illinois,

Chairman, National Forestry Policy Committee, Chamber of Commerce of the United States.

Anson C. Goodyear, New York,

President, Great Southern Lumber Company.

George Bird Grinnel, New York,

Author and Explorer.

William Kent, California.

Mrs. Maud Wood Park, Washington, D. C.,

President, National League of Women Voters.

Gifford Pinchot, Pennsylvania,

Governor of Pennsylvania.

Filibert Roth, Michigan,

Former Dean of Forestry, University of Michigan.

Harvey H. Shepard, Massachusetts,

President, Massachusetts Forestry Association.

B. H. Snell, New York,

Member of Congress from New York.

Henry Van Dyke, New Jersey,

Author.

Henry C. Wallace, Washington,

Secretary of Agriculture.

John W. Weeks, Massachusetts,

Secretary of War.

William Allen White, Kansas,

Editor and Author.

Mrs. T. G. Winter, Minnesota,

President, General Federation of Women's Clubs.

Treasurer:

George O. Vass, Vice-President, Riggs National Bank, Washington, D. C.

Directors:

Earnest Dane, Massachusetts, 1924.

George Hewitt Myers, Washington, D. C., 1924.

Joseph Hyde Pratt, North Carolina, 1924-1928, North Carolina Geological Survey.

Mrs. John D. Sherman, Illinois, 1924-1928, Chairman, Committee on Conservation.

General Federation of Women's Clubs.

Henry W. Shoemaker, Pennsylvania, 1924-1928, Member of State Forest Commission.

J. R. Swift, Pennsylvania, 1924-1926.

William P. Wharton, Massachusetts, 1924-1927.

PROPOSED AMENDMENTS TO BY-LAWS

Recommendation No. 1.—Amend the last sentence of Section 6, Article 3, to read as follows:

"The price of the magazine to non-members and to members of other organizations affiliated with the Association shall be fixed from time to time by the Board of Directors."

This amendment is proposed in order to

give the Directors more flexible action in entering into affiliations with organizations actively engaged in promoting the cause of forestry or the conservation of other natural resources.

Amend the last sentence of Section 4, Article 3, to read:

"The Secretary, however, may in his discretion remit the dues of any member."

The Secretary, rather than the Board of Directors, should be held directly responsible for the efficient management of membership details.

Recommendation No. 2.—Eliminate all of Section 3, Article 4, and number the remaining sections to follow in consecutive order.

Section 3 of Article 4, as it now reads, is superfluous, in that its conditions with respect to terms of office of members of the Board of Directors will have been fully met with the forthcoming election.

Recommendation No. 3.—Amend Section 6, Article 4, to provide that:

"A meeting of the Board shall be held at least once every four months."

instead of every three months, as now provided.

Members of the Board are widely separated geographically, and four meetings a year imposes upon some members an unreasonable expense in both time and money. It is believed that three meetings a year will be wholly satisfactory.

Recommendation No. 4.—Amend Section 3, Article 5, to read in full as follows:

"The annual financial report for any calendar year shall be printed in an issue of the Association magazine published not later than the month of March following."

This amendment seems advisable because the present By-Laws, which provide that the financial report shall be printed in the issue of the magazine immediately following the annual meeting, are impractical. For example, the February issue of the magazine is made up not later than January 5, and if the annual meeting is held following this date in January it will be impossible to conform to this requirement of the By-Laws.

Recommendation No. 5.—Amend Section 2, Article 6, by striking out all of its provisions and substituting the following:

"Members of the Board of Directors shall serve for terms of five years each. The term of three Directors shall expire at the close of each calendar year, and at each annual meeting their successors shall be elected for the full term of five years. If vacancies occur in the Board of Directors, Directors shall be elected at the next annual meeting to fill such vacancies, in each case

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FRANKLIN MOON, Dean

for the unexpired term of the Director whose position has become vacant, as shall have been determined by the original election of such Directors."

Section 2 of the present By-Laws was designed primarily to effect an adjustment of the terms of certain directors. Since this will have been accomplished at the forthcoming annual meeting, it is believed there is no further need for this portion of the section.

Recommendation No. 6.—Amend Section 2, Article 12, to read in full as follows:

"The Board of Directors may by resolution recognize and designate as organizations affiliated with the American Forestry Association such State Forestry Associations or other organizations active in or desirous of promoting the conservation of forests and other natural resources, which in the judgment of the Board, in view of their character, membership, and purposes, make affiliation desirable in furtherance of the common objects of the Association and of the organizations desirous of affiliation. In carrying out the objects of this section, the Board of Directors may prescribe the conditions of affiliation and may fix the price at which the Association's magazine will be furnished to affiliated members."

This section follows closely the present section of the By-Laws, and the slight change proposed is for the purpose of making clear the extent of the authority of the Board in entering into affiliations with other organizations.

SECRETARY WALLACE CORRECTS MISSTATEMENTS ON ALASKA

Secretary of Agriculture Wallace, in a letter to the *Paper Trade Journal*, has taken occasion to correct some statements made about Alaska.

"My attention has been called to the leading editorial in the September 27 issue of the *Paper Trade Journal*, entitled 'Alaska's Problem,' says the Secretary. "This editorial, while properly expressing a caution against any expectation of sudden and great developments in Alaska, contains certain misstatements in regard to which I am sure both you and your readers would welcome correct information. These misstatements are summarized in the sentence, 'Thus Alaska has little water power, a limited area of richly timbered land, and bad transportation.'

"I am at a loss to understand the prevalence of the idea that southeastern Alaska lacks water power, or that its water-power resources are unsuitable for use in the manufacture of pulp and paper. The editorial states that in this part of Alaska 'The continental divide is backed right up against the seacoast. This offers a good chance for rafting logs, but precludes the possibility of water power. The streams are all small, even though the fall in many cases is great. The water has not enough bulk to turn a turbine.' The facts are otherwise."

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